Measurement of RF Interference from a ATE Research Model ATE24 Transciever ISM Band (2400 to 2483.5MHz) using Various Antenna Configurations.

For : ATE Research LLC
Chicago IL 60611

P.O. No. : C.C.
Date Received : January 19 , 2004
Date Tested : January 19 through January 24, 2004
Test Personnel : Richard E. King
Specification : FCC "Code of Federal Regulations" Title 47 Part 15.247, Subpart C

Test Report By : Richard E. King

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EMC Engineer

Witnessed by :

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Measurement of RF Emissions from a ATE Research LLC Model ATE24 Transciever

1.0 INTRODUCTION:

1.1 Description of Test Item - This document presents the results of tests performed to determine if the ATE Research LLC Model ATE24 Transceiver (ISM Band) would meet the FCC requirements when using a MaxRad Model MPR24026PTNF parabolic dish antenna, a Comtelco Model BS2400XL12-0 omni-directional antenna, a Radiowaves, Inc. Model SEC-25V-90-16 90º Sectored antenna, a WIFI-Plus Model Tetrad-M 2.4GHz array point-to-point antenna, a WIFI-Plus 4in Beam 2.4GHz point-to-multipoint antenna, a WIFI-Plus Model MP-Bullet 2.4GHz omni-directional antenna, a WIFI-Plus Model MP-5 Omni omni-directional antenna, a WIFI-Plus Model MP-5 4-way Omni array omni-directional antenna and a WIFI-Plus Model Wisper Dual Band sectored antenna.

The test item is a Motorola Canopy transceiver modified to accept external antennas and designed to transmit in the 2400MHz to 2483.5MHz band. The tests were performed for ATE Research LLC, of Chicago, Illinois.

1.2 Purpose - The test series was performed to determine if the test item meets the requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections for Intentional Radiators. Testing was performed in accordance with ANSI C63.4-2001.

1.3 Deviations, Additions and Exclusions - There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4 Applicable Documents - The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C, dated 1 October 2003
- ANSI C63.4-2001, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"

1.5 Subcontractor Identification - This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.6 Laboratory Conditions The temperature at the time of the test was 23ºC and the relative humidity was 11%.

2.0 TEST ITEM SETUP AND OPERATION:

The test item is a ATE Research LLC Model ATE24 Transciever with external antennas. A block diagram of the test item setup is shown as Figure 1.

2.1 Power Input - The test item was powered with 24VDC from a Motorola Model SADB-1129 transformer via the 45 feet of CAT 5 ethernet cable.

2.2 Grounding - The test item was grounded via the 45 feet of CAT 5 ethernet cable to the transformer.

2.3 Peripheral Equipment - The test item utilized a Sony Vaio laptop to power and communicate with the test item via one 45 foot long CAT 5 ethernet cable.

2.4 Interconnect Cables - The test item was connected to the laptop via a 45 foot long CAT 5 ethernet cable.

2.5 Operational Mode - For all tests the test item was placed on a 80cm high non-conductive stand. The test item and all peripheral equipment were energized.

For all tests, the test item was controlled and powered by the laptop computer. Through the computer the test item was set to transmit continuously. The tests were performed with the test item transmitting at 2415MHz, 2435MHz and 2457.5MHz.

3.0 TEST EQUIPMENT:

3.1 Test Equipment List - A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

3.2 Calibration Traceability Test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 Powerline Conducted Emissions

4.1.1 Requirements – Per 15.207, all radio frequency voltages on the power lines of a Subpart C intentional radiator shall be below the values shown below when using the appropriate detector:

CONDUCTED LIMITS FOR CLASS B DEVICE

Frequency MHz	RFI Voltage dBuV(QP)	RFI Voltage dBuV(Average)

0.15-0.5	66 decreasing with logarithm of frequency to 56	56 decreasing with logarithm of frequency to 46
0.5-5	56	46
5-30	60	50

Note 1: The lower limit shall apply at the transition frequencies.

Note 2: If the levels measured using the QP detector meet both the QP and the Average limits, the test item is considered to have met both requirements and measurements do not need to be performed using the Average detector.

A photograph of the test item setup is presented as Figure 2.

4.1.2 Procedures - The interference on each power lead of the Motorola P/N: ACPS110, Model SADB-1129 power supply was measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. The meter terminal of the LISN not under test was terminated with 50 ohms. Measurements were first made over the entire frequency range from 150kHz through 30MHz with a peak detector and the results were automatically plotted. The data thus obtained was then searched by the computer for the highest levels. Quasi-peak measurements were automatically performed at the frequencies selected from the highest peak measurements, and the results printed.

4.1.3 Results - The plots of the peak preliminary conducted voltage levels on each power line are presented on pages 18 and 19. The conducted limits for Subpart C intentional radiators are shown as a reference. The final quasi-peak results are presented on pages 20 and 21. As can be seen by the data, the test item did meet the powerline conducted emissions limits of 15.207.

4.2 Antenna Conducted Emissions and Band Edge Compliance Measurements

4.2.1 Requirements – Per section 15.247(c), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated emissions measurement. Attenuation below the general limits specified in §15.209(a) is not required.

In addition, at the edges of the band in which the intentional radiator is allowed to operate (2400MHz and 2483.5MHz) , the radio frequency power that is produced by the intentional radiator at the antenna port must be 20dB below the highest level of the desired power. The radiated emissions which fall in the restricted band beginning at 2483.5MHz, must meet the general limits of 15.209.

4.2.2 Procedures – The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 100kHz with a video bandwidth of 1MHz.

For antenna conducted emissions, the maximum meter reading was recorded for the harmonics starting with the 2nd harmonic up to the 6th harmonic. The peak emissions in a 100kHz bandwidth were measured. The plots of the antenna conducted output measurements from 30MHz to 24GHz were measured. The spurious emissions requirements of 15.247(c) are shown on each plot.

For band edge compliance, separate plots were made of the radio frequency power that is produced at the antenna port. The 20dB down point at the band edge is shown on each plot. For the radiated emissions which fall in the restricted band the "marker-delta" method described in Public Notice DA 00-705 was used.

4.2.3 Results: The antenna conducted emissions are shown on data pages 22 and 30. As can be seen by the data the test item did meet the antenna conducted emissions limits of 15.247(c).

The band edge compliance plots are shown on data pages 33 and 34. As can be seen by the data, the test item did meet the band edge compliance limits of 15.247(c).

4.3 Radiated Measurements

4.3.1 Requirements - Per section 15.247(c), radiated emissions which fall in the restricted bands, as defined in 15.205(a), must comply with the radiated emission limits specified in 15.209(a) (see 15.205(c)).

Paragraph 15.209(a) has the following radiated emission limits:

Frequency MHz	Field Strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	3
30.0-88.0	100	3
88.0-216.0	150	3
216.0-960.0	200	3
Above 960	500	3

4.3.2 Procedures - Radiated measurements were manually performed in a 32ft. x 20ft. x 14ft. high shielded enclosure. The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering

the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

The radiated emission tests were performed for all harmonics which fall in restricted bands. To ensure that maximum emission levels were measured, the following steps were taken:

1) Measurements were made using an average detector and a standard gain horn antenna.
2) To ensure that maximum or worst case, emission levels were measured, the following steps were taken:
   (a) The test item was rotated so that all of its sides were exposed to the receiving antenna.
   (b) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
   (c) The measuring antenna was raised and lowered for each antenna polarization to maximize the readings.

Radiated emissions measurements were taken at a distance of 1 meter for all harmonics greater than 7372.5MHz. The reading was converted to an equivalent field intensity at 3 meters using linear extrapolation. A -9.5dB (-9.5 = 20 * log (1m/3m)) distance correction factor was applied to all data.

In addition, a preliminary sweep was made from 30MHz to 2GHz to ensure that no radiated emissions in the restricted bands exceeded the limits of 15.209(a).
Photographs of the test item setup with each antenna are presented as Figures 3 through 11.

4.3.3 Results - The preliminary radiated emissions plots from 30MHz to 2GHz are presented on data pages 35 through 37. All emissions in the restricted band were below the limits of 15.209(a).

Radiated emissions data for all harmonics in the restricted bands are presented on data pages 38 through 55. These radiated emissions data pages represent all nine antennas tested. As can be seen by the data the test item did meet the emissions limits of 15.247(c).

4.4 Power Spectral Density

4.4.1 Requirements – Per section 15.247(d), for digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

4.4.2 Procedures – The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. Per FCC 97-114, an emission peak was located in the passband. The resolution bandwidth was set to 3kHz with a video bandwidth of 30kHz and the span was set to 2MHz. The sweep time was set to 667 seconds (SPAN/3kHz = $2 \times 10^6 / 3 \times 10^3 = 667$ seconds).

4.4.3 Results: Power spectral density plots are shown on data pages 56 through 58. The display line on each plot shows the 8dBm limit (8dBm - 40dBm external attenuation = -32dBm).

As can be seen by the data the test item did meet the power spectral density limits of 15.247(d).

4.5 Bandwidth

4.5.1 Requirements – Per section 15.247(a)(2), for digitally modulated systems, the minimum 6dB bandwidth shall be at least 500kHz.

4.5.2 Procedures – The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 100kHz with a video bandwidth of 1MHz and the span was set to 50MHz. The markers on the plots represent the 6dB down points from the transmit frequency.

4.5.3 Results: Bandwidth plots are shown on data pages 59 through 61. As can be seen by the data the test item did meet the minimum 6dB bandwidth requirements.

4.6 Power Output

4.6.1 Requirements – Per section 15.247(b)(3), for digitally modulated systems, the maximum peak output power shall not exceed 1 watt (30dBm).

4.6.2 Procedures – The antenna port of the transmitter was connected to a spectrum analyzer through two 20dB attenuators. The resolution bandwidth was set to 1MHz with a video bandwidth of 1MHz. The peak power was calculated by applying a bandwidth correction factor of 10*log(B/1MHz) to the peak reading at the antenna port of the transmitter. (B is the 26dB bandwidth of the signal).

4.6.3 Results: Power output data at all three transmit frequencies are shown on data page 62. As can be seen by the data the test item did meet the maximum peak output power requirements of 15.247(b)(3).

5.0 CONCLUSIONS:

It was determined that the ATE Research LLC Model ATE24 Transciever tested with the MaxRad Model MPR24026PTNF parabolic dish antenna, a Comtelco Model BS2400XL12-0 omni-directional antenna, a Radiowaves, Inc. Model SEC-25V-90-16 90º Sectored antenna, a WIFI-Plus Model Tetrad-M 2.4GHz array point-to-point antenna, a WIFI-Plus 4in Beam 2.4GHz point-to-multipoint antenna, a WIFI-Plus Model MP-Bullet 2.4GHz omni-directional antenna, a WIFI-Plus Model MP-5 Omni omni-directional antenna, a WIFI-Plus Model MP-5 4-way Omni array omni-directional antenna and a WIFI-

Plus Model Wisper Dual Band sectored antenna., did fully meet the selected emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15.247, Subpart C, Section 15.205 et seq. for Intentional Radiators, when tested per ANSI C63.4-2001.

6.0 CERTIFICATION:

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the test item at the test date. Any electrical or mechanical modification made to the test item subsequent to the specified test date will serve to invalidate the data and void this certification.

7.0 ENDORSEMENT DISCLAIMER:

This report must not be used to claim product endorsement by NVLAP or any agency of the US Government.

TABLE I: TEST EQUIPMENT LIST

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Cal Inv	Due Date
Equipment Type: ACCESSORIES, MISCELLANEOUS								
XOB2	ADAPTER	HEWLETT PACKARD	K281C,012	09407	18-26.5GHZ		NOTE 1	
XPR0	HIGH PASS FILTER	K&L MICROWAVE	11SH10-4800/	001	4.8-20GHZ	07/03/03	12	07/03/04
XLQA	5W, 50 OHM TERMINATION	JFW INDUSTRIES	50T-052	45	DC-2GHZ	10/31/03	12	10/31/04
XZG0	ATTENUATOR/SWITCH DRIVER	HEWLETT PACKARD	11713A	3439A02724	---		N/A	
Equipment Type: AMPLIFIERS								
APH0	POWER AMPLIFIER	HEWLETT PACKARD	11975A	2304A00322	2-8GHZ		NOTE 1	
APK0	PRE-AMPLIFIER	HEWLETT PACKARD	8449B	3008A00662	1-26.5GHZ	02/04/04	12	02/04/05
Equipment Type: ANTENNAS								
NHA0	STANDARD GAIN HORN ANTENNA	NARDA	640	---	8.2-12.4GHZ		NOTE 1	
NHG1	STANDARD GAIN HORN ANTENNA	NARDA	638	---	18-26.5GHZ		NOTE 1	
NWI0	RIDGED WAVE GUIDE	AEL	H1498	153	2-18GHZ	09/05/03	12	09/05/04
Equipment Type: ATTENUATORS								
T2DC	20DB, 25W ATTENUATOR	WEINSCHEL	46-20-34	BH5448	DC-18GHZ	12/02/03	12	12/02/04
T2DE	20DB 25W ATTENUATOR	WEINSCHEL	46-20-34	BN1032	DC-18GHZ	02/24/04	12	02/24/05
T1EA	10DB, 25W ATTENUATOR	WEINSCHEL	46-10-34	BN2316	DC-18GHZ	03/11/04	12	03/11/05
Equipment Type: CONTROLLERS								
CDE0	COMPUTER	HEWLETT PACKARD	D4139A#ABA	US62651923	---		N/A	
Equipment Type: PROBES; CLAMP-ON & LISNS								
PLL9	50UH LISN 462D	ELITE	462D/70A	010	0.01-400MHZ	03/02/04	12	03/02/05
PLLA	50UH LISN 462D	ELITE	462D/70A	011	0.01-400MHZ	03/02/04	12	03/02/05
Equipment Type: RECEIVERS								
RBA0	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB26	100145	20HZ-26.5GHZ	03/14/03	18	09/14/04
RAC1	SPECTRUM ANALYZER	HEWLETT PACKARD	85660B	3407A08369	100HZ-22GHZ	02/04/04	12	02/04/05
RACB	RF PRESELECTOR	HEWLETT PACKARD	85685A	3506A01491	20HZ-2GHZ	02/04/04	12	02/04/05
RAE1	SPECTRUM ANALYZER (DCC-CEM	HEWLETT PACKARD	85660A	2209A01336	100HZ-22GHZ	02/14/04	12	02/14/05
RAF3	QUASIPEAK ADAPTER	HEWLETT PACKARD	85650A	3303A01775	0.01-1000MHZ	02/04/04	12	02/04/05
RAI0	FREQUENCY MIXER	HEWLETT PACKARD	11970A	2332A00292	26-40GHZ	06/02/03	N/A	

Cal. Interval: Listed in Months I/O: Initial Only N/A: Not Applicable
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

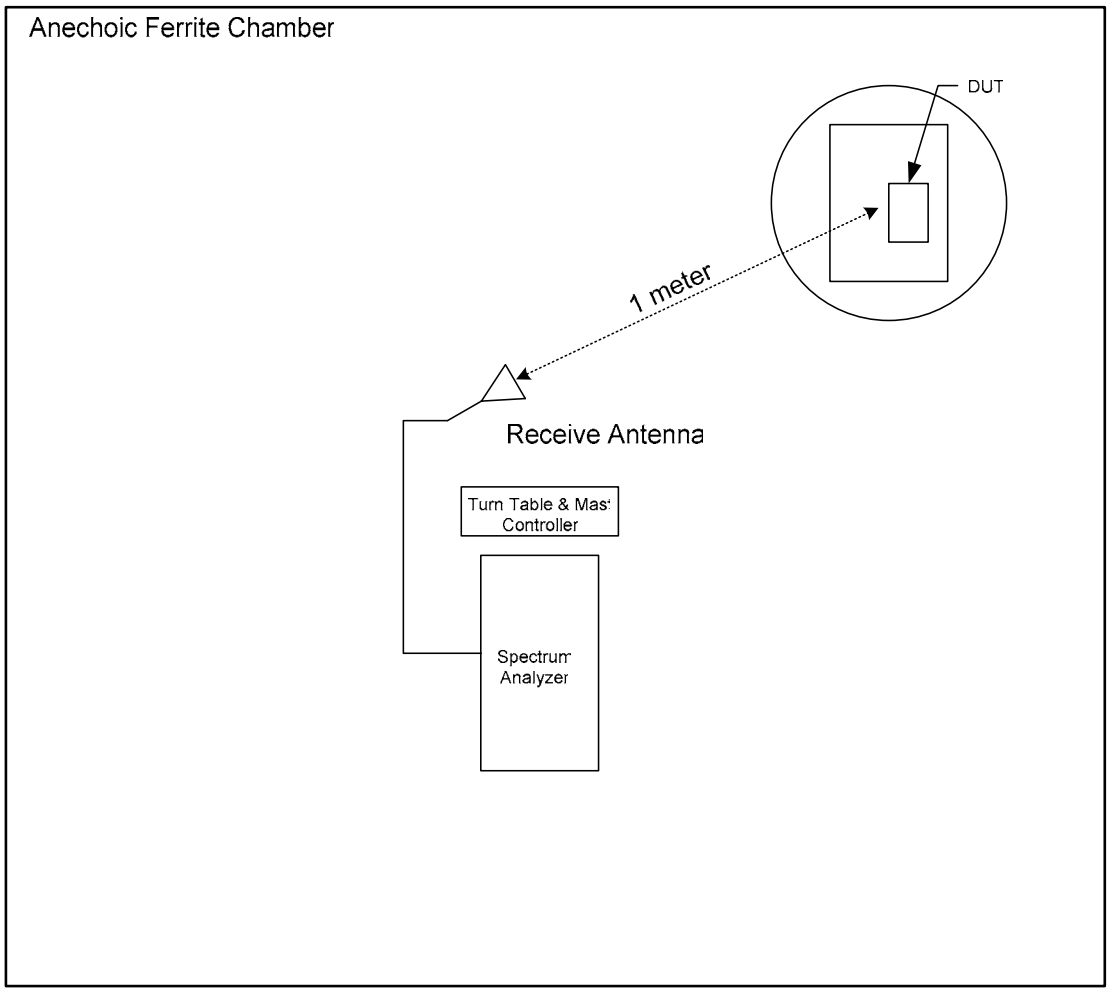
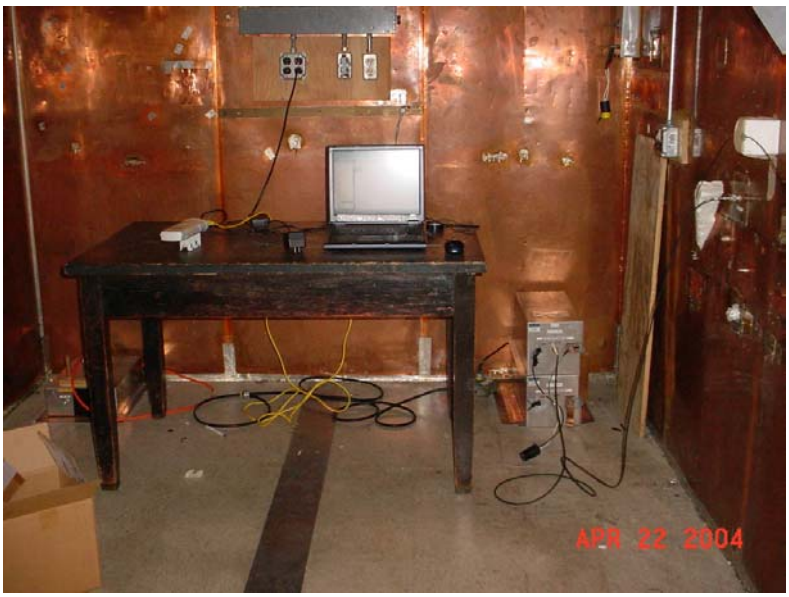


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

Figure 2



Test Setup for Conducted Emissions Measurements from an ATE Research ATE24 Transciever

Figure 3

Test Setup for Measurement of Radiated Emissions from MaxRad Model MPR24026PTNF Dish Antenna

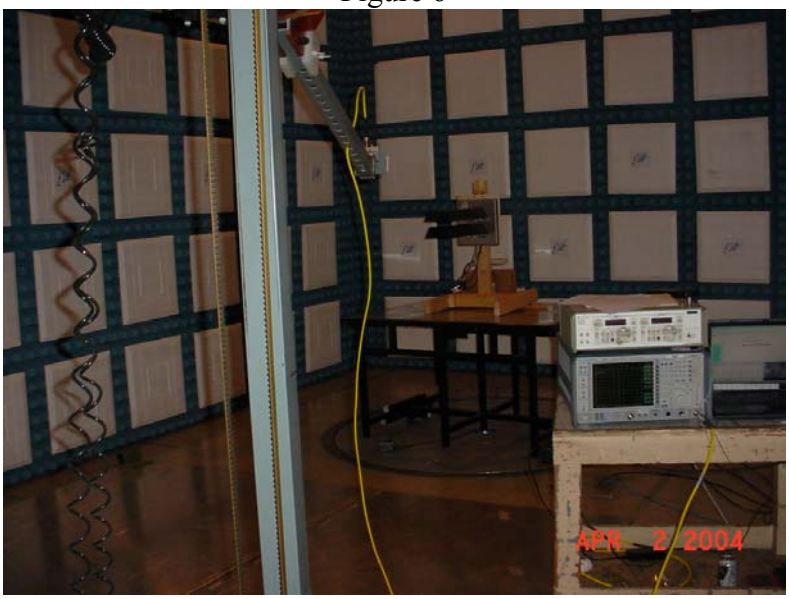
Figure 4

Test Setup for Measurement of Radiated Emissions from a Comtelco Model BS2400XL12-0 Omni Antenna

Figure 5

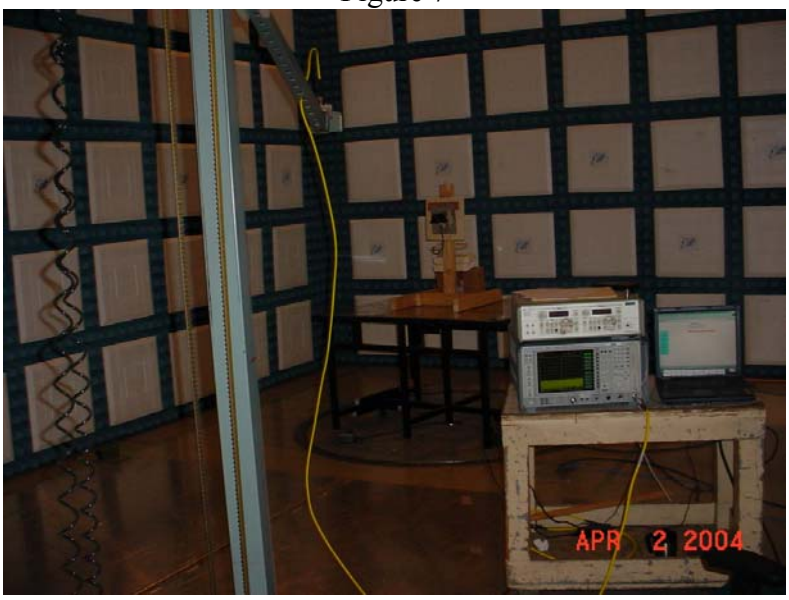
Test Setup for Measurement of Radiated Emissions from a RadioWaves 90º Sectored Antenna

Figure 6



Test Setup for Measurement of Radiated Emissions from a WIFI Tetrad-M Array Antenna

Figure 7



Test Setup for Measurement of Radiated Emissions from a WIFI Model MP 4in. Beam Antenna

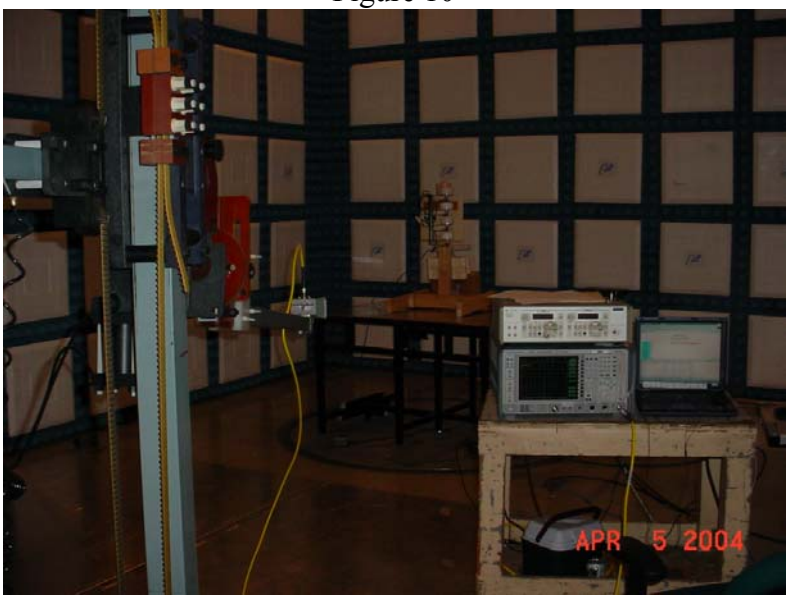
Figure 8

Test Setup for Measurement of Radiated Emissions from a WIFI Model MP Bullet Atenna

Figure 9

Test Setup for Measurement of Radiated Emissions from a WIFI MP5 Omni Antenna

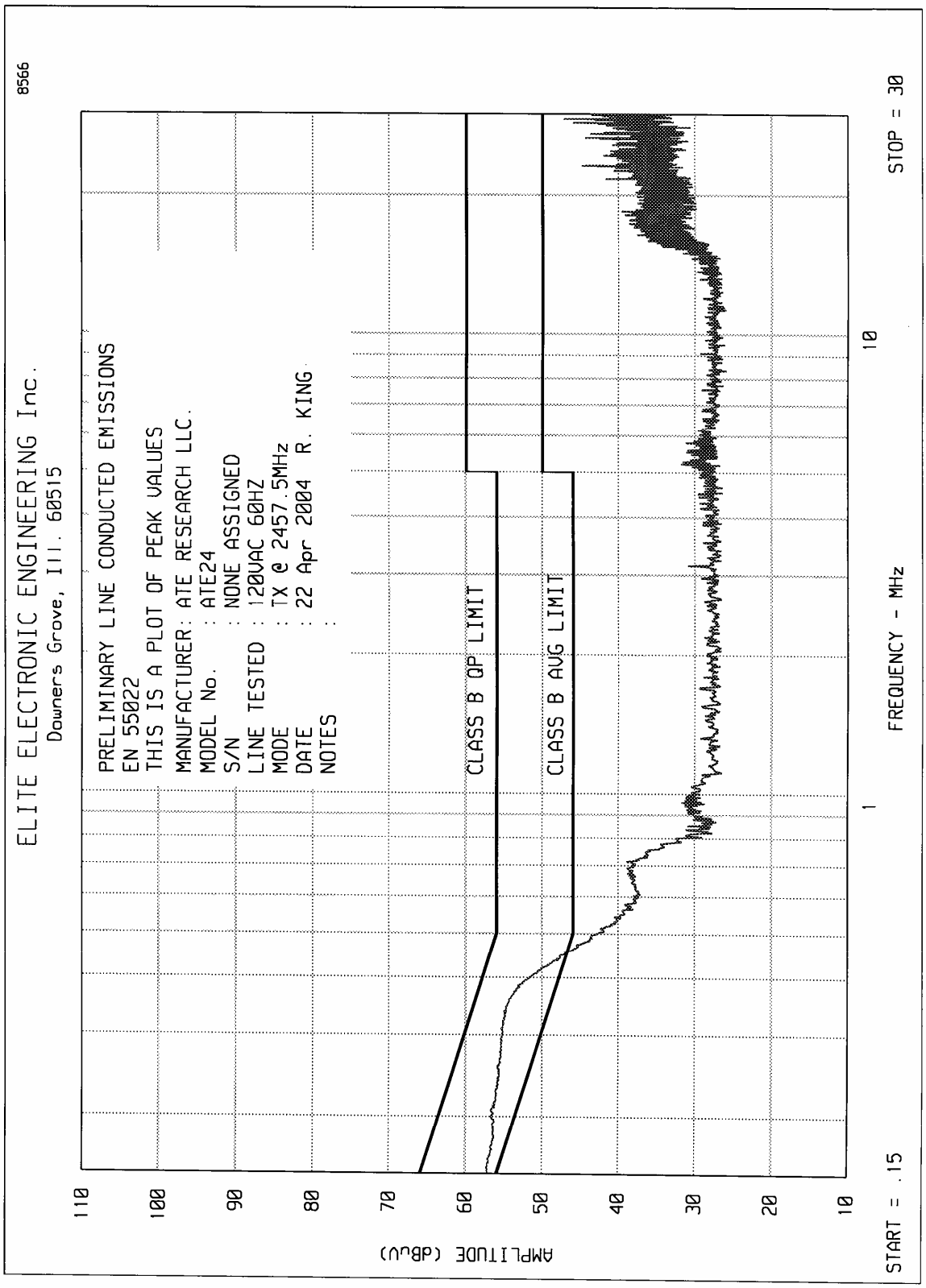
Figure 10

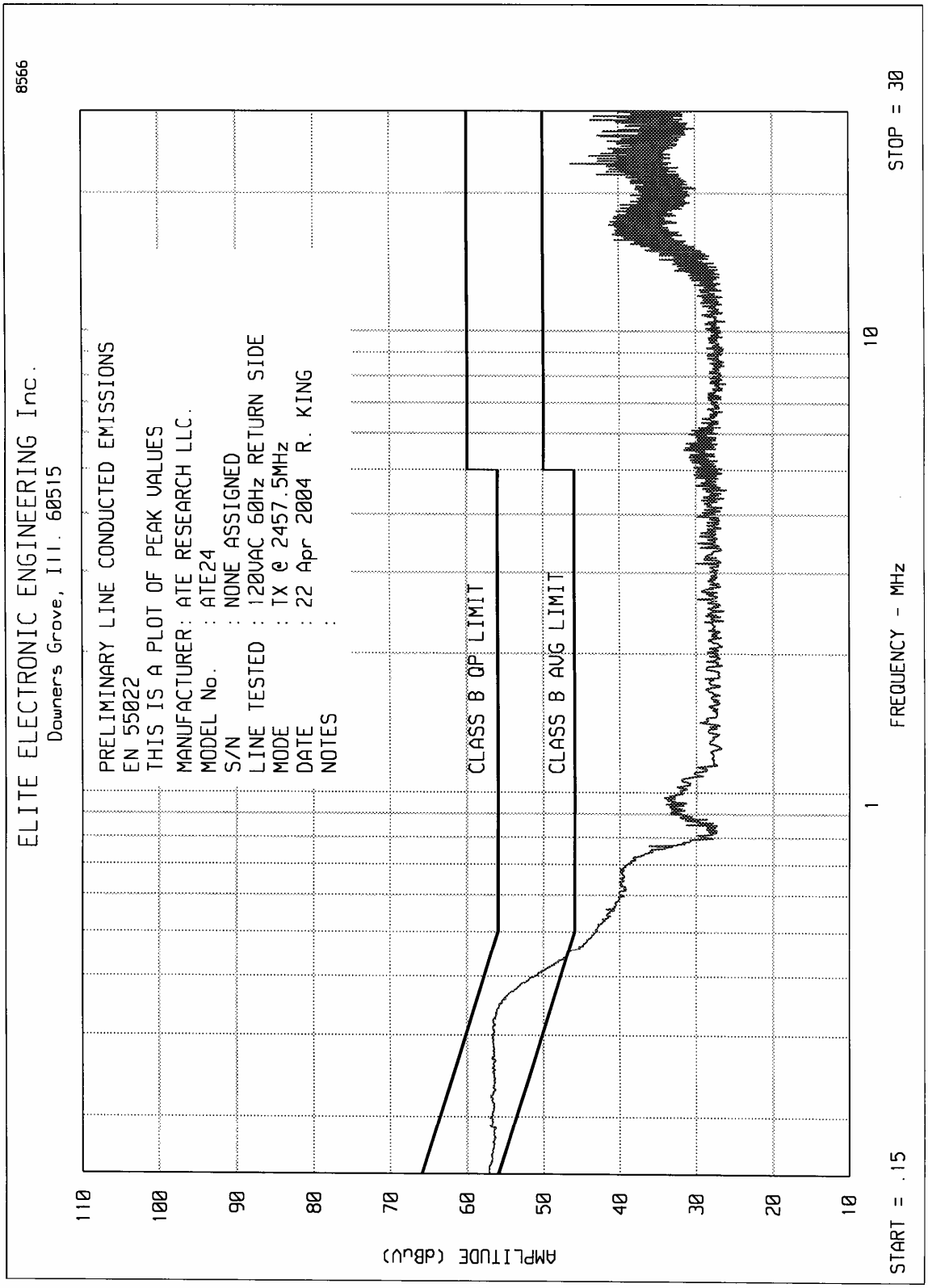


Test Setup for Measurement of Radiated Emissions from a WIFI MP5 4-Way Omni Antenna

Figure 11

Test Setup for Measurement of Radiated Emissions from a WIFI Wisper Dual Band Sectored Antenna


8566
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
PRELIMINARY LINE CONDUCTED EMISSIONS
EN 55022
THIS IS A PLOT OF PEAK VALUES
MANUFACTURER: ATE RESEARCH LLC.
MODEL No. : ATE24
S/N : NONE ASSIGNED
LINE TESTED : 120VAC 60HZ
MODE : TX @ 2457.5MHz
DATE : 22 Apr 2004 R. KING
NOTES :
CLASS B QP LIMIT
CLASS B AVG LIMIT
AMPLITUDE (dBuV)
110
100
90
80
70
60
50
40
30
20
10
START = .15
1
10
STOP = 30
FREQUENCY - MHz


8566
ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
PRELIMINARY LINE CONDUCTED EMISSIONS
EN 55022
THIS IS A PLOT OF PEAK VALUES
MANUFACTURER: ATE RESEARCH LLC.
MODEL No. : ATE24
S/N : NONE ASSIGNED
LINE TESTED : 120VAC 60Hz RETURN SIDE
MODE : TX @ 2457.5MHz
DATE : 22 Apr 2004 R. KING
NOTES : :
CLASS B QP LIMIT
CLASS B AVG LIMIT
AMPLITUDE (dBuV)
110
100
90
80
70
60
50
40
30
20
10
START = .15
1
10
STOP = 30
FREQUENCY - MHz

ETR No.
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : ATE RESEARCH LLC.
MODEL : ATE24
S/N : NONE ASSIGNED
SPECIFICATION : EN 55022, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120VAC 60HZ
MODE : TX @ 2457.5MHz
DATE : 22 Apr 2004
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.153	48.2	65.8		55.8	
.244	46.5	61.9		51.9	
.307	45.6	60.0		50.0	
.343	44.6	59.1		49.1	
.448	36.5	56.9		46.9	
.706	28.1	56.0		46.0	
.998	25.8	56.0		46.0	
2.314	26.2	56.0		46.0	
3.918	26.8	56.0		46.0	
6.162	26.5	60.0		50.0	
9.047	25.3	60.0		50.0	
13.128	25.3	60.0		50.0	
16.411	29.0	60.0		50.0	
17.511	29.1	60.0		50.0	
18.122	29.5	60.0		50.0	
18.427	30.3	60.0		50.0	
21.664	35.0	60.0		50.0	
23.130	41.8	60.0		50.0	
24.350	38.6	60.0		50.0	
24.901	37.0	60.0		50.0	
26.610	40.7	60.0		50.0	
27.160	40.9	60.0		50.0	
29.237	44.1	60.0		50.0	

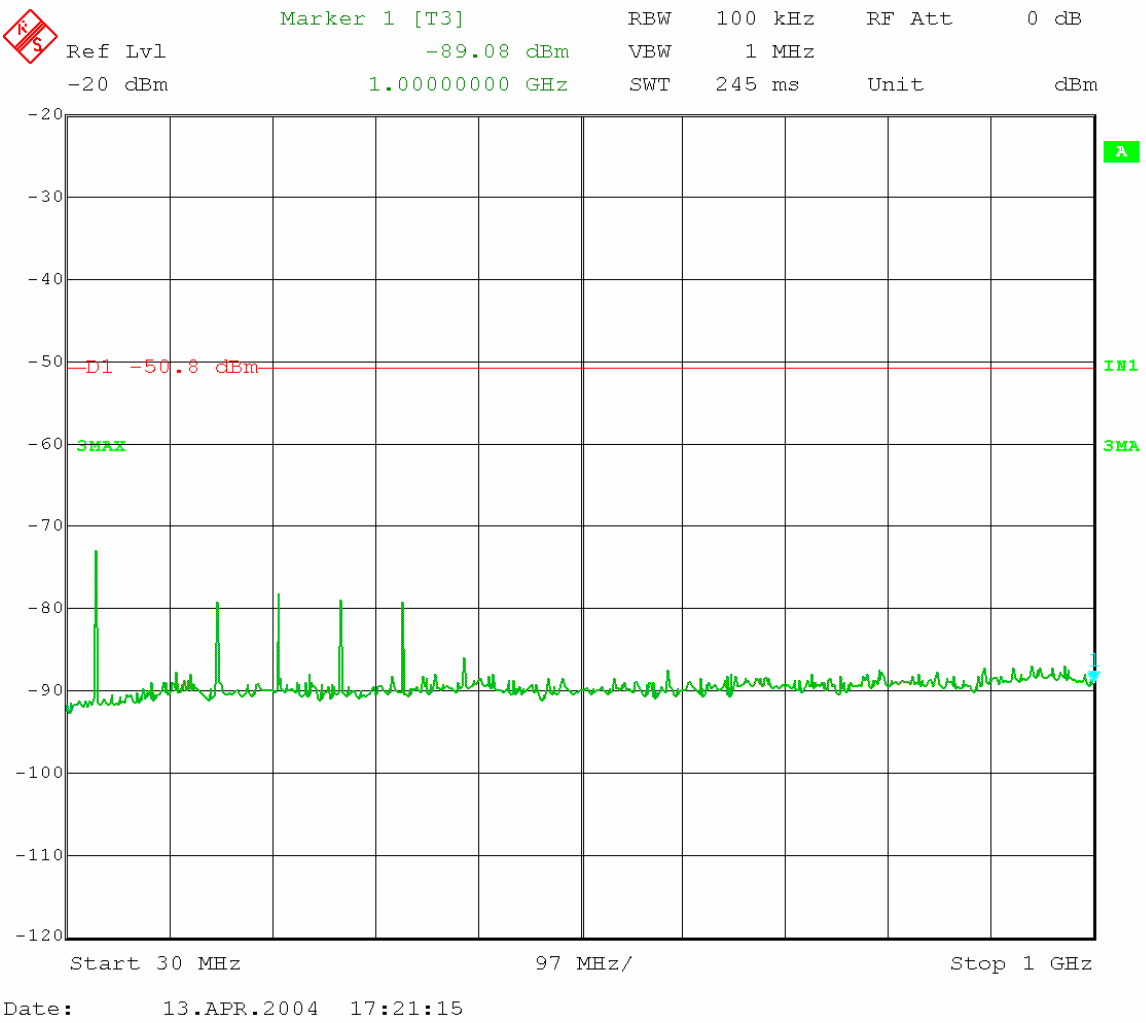
CHECKED BY: Richard E. King
R. KING

ETR No.
ELITE ELECTRONIC ENGINEERING CO.

MANUFACTURER : ATE RESEARCH LLC.
MODEL : ATE24
S/N : NONE ASSIGNED
SPECIFICATION : EN 55022, CLASS B
TEST : LINE CONDUCTED EMISSIONS
LINE TESTED : 120VAC 60Hz RETURN SIDE
MODE : TX @ 2457.5MHz
DATE : 22 Apr 2004
NOTES :
RECEIVER : HP 8566 w/ HP85650A QP ADAPTOR
VALUES MEASURED WITH QP DETECTOR USING 9kHz BANDWIDTH

FREQUENCY MHz	METER RDG. dBuV	QP LIMIT dBuV	AVG RDG dBuV	AVG LIMIT dBuV	NOTES
.150	48.6	66.0		56.0	
.183	47.6	64.3		54.3	
.248	46.9	61.8		51.8	
.299	46.3	60.3		50.3	
.342	45.4	59.1		49.1	
.445	35.7	57.0		47.0	
.640	29.5	56.0		46.0	
.966	26.3	56.0		46.0	
1.754	25.7	56.0		46.0	
3.142	26.1	56.0		46.0	
5.388	27.7	60.0		50.0	
6.095	26.6	60.0		50.0	
9.155	25.3	60.0		50.0	
13.159	27.9	60.0		50.0	
16.230	38.0	60.0		50.0	
16.229	38.0	60.0		50.0	
16.982	37.9	60.0		50.0	
17.592	37.5	60.0		50.0	
18.509	35.9	60.0		50.0	
21.663	35.6	60.0		50.0	
22.457	36.8	60.0		50.0	
23.130	42.5	60.0		50.0	
24.045	37.5	60.0		50.0	
26.549	38.7	60.0		50.0	
26.608	40.4	60.0		50.0	
27.160	39.5	60.0		50.0	
28.686	40.3	60.0		50.0	

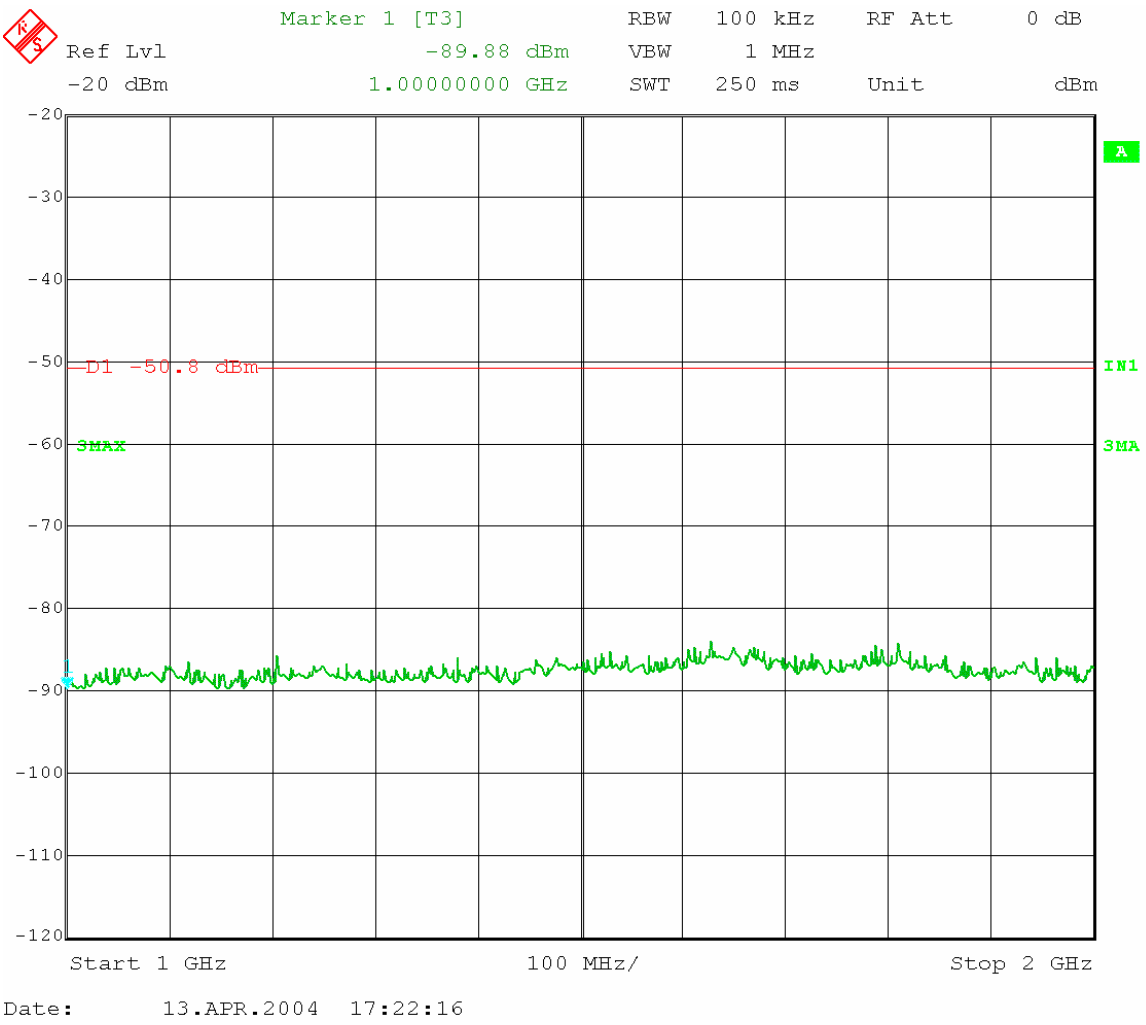
CHECKED BY: Richard E. King
R. KING



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2415.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

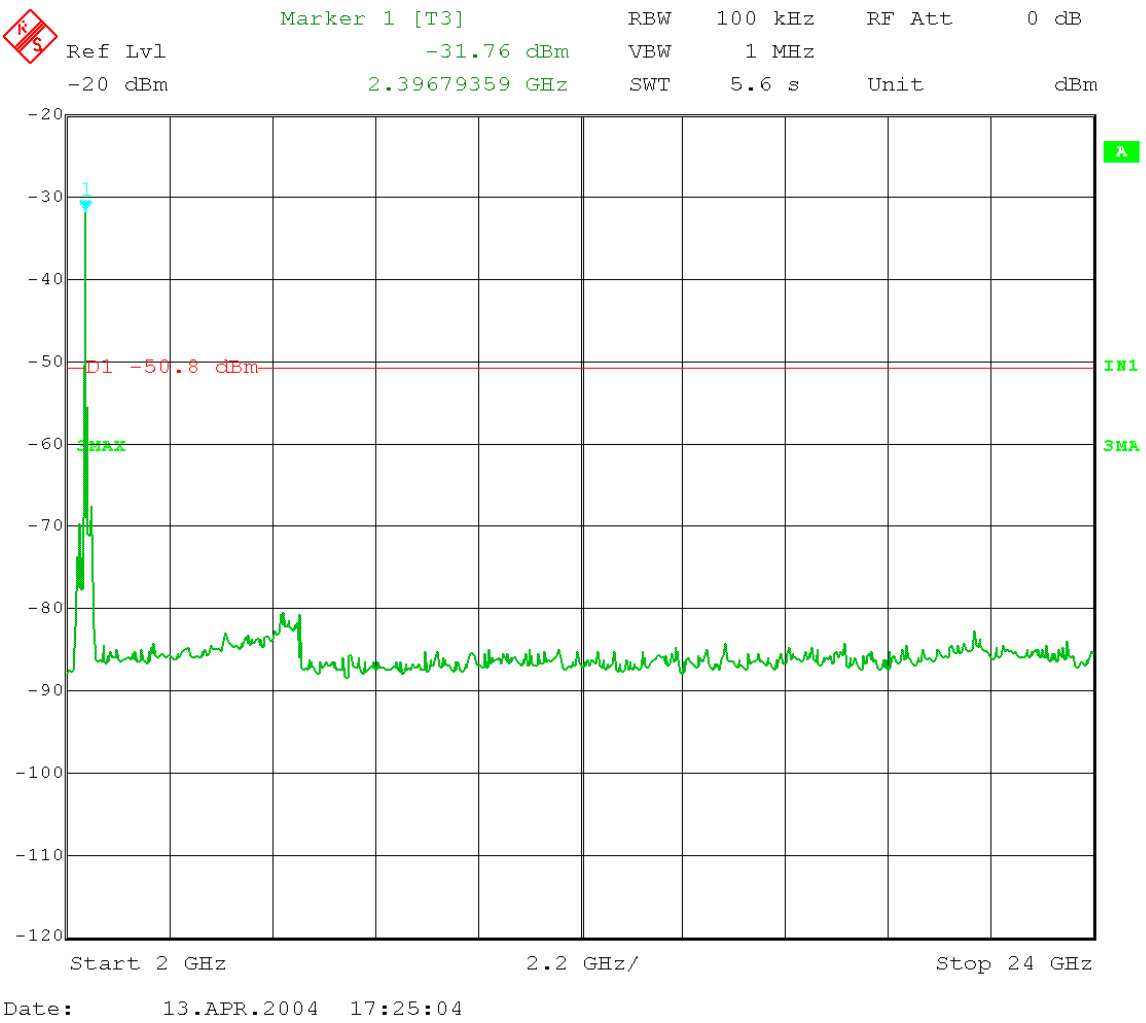
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2415.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

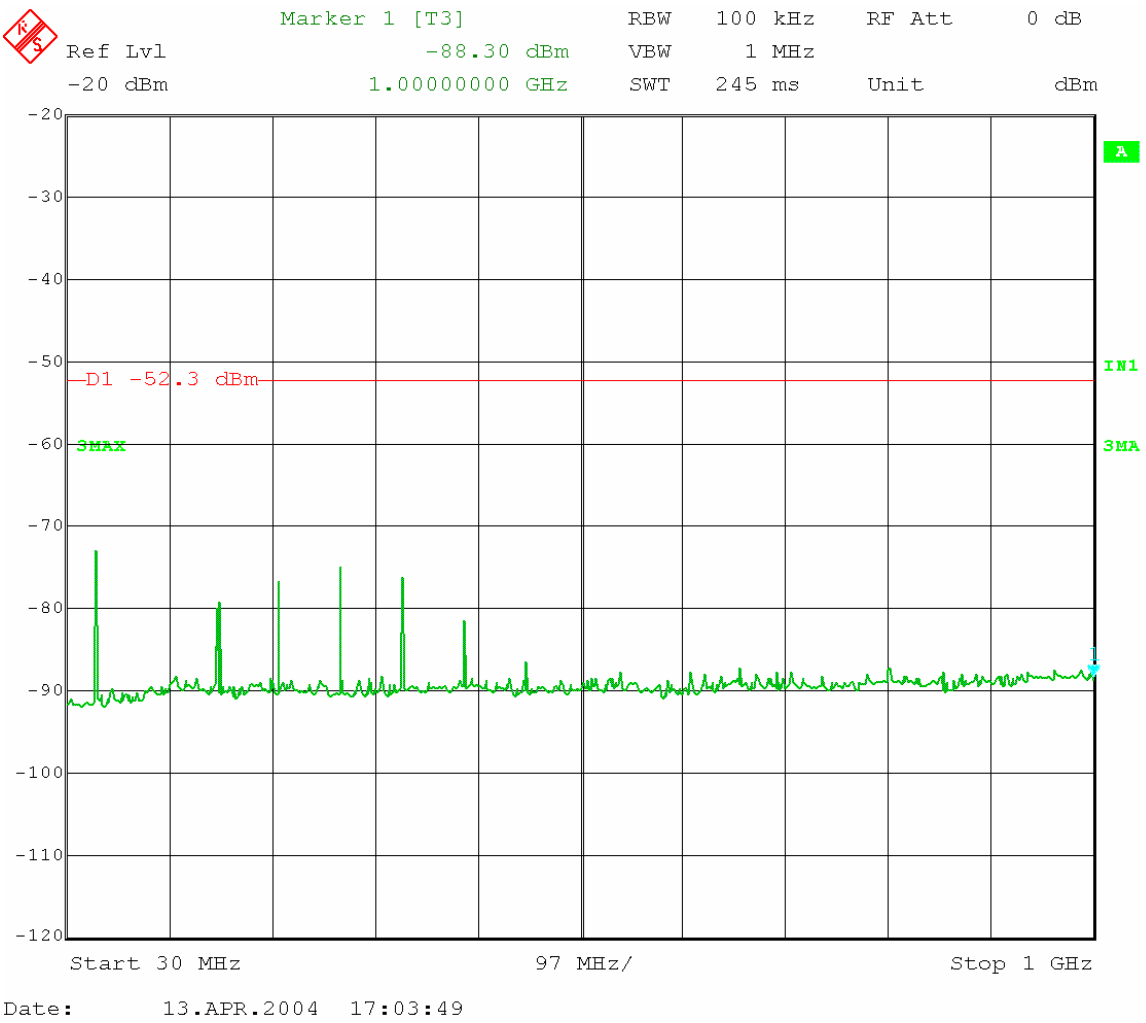
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2415.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

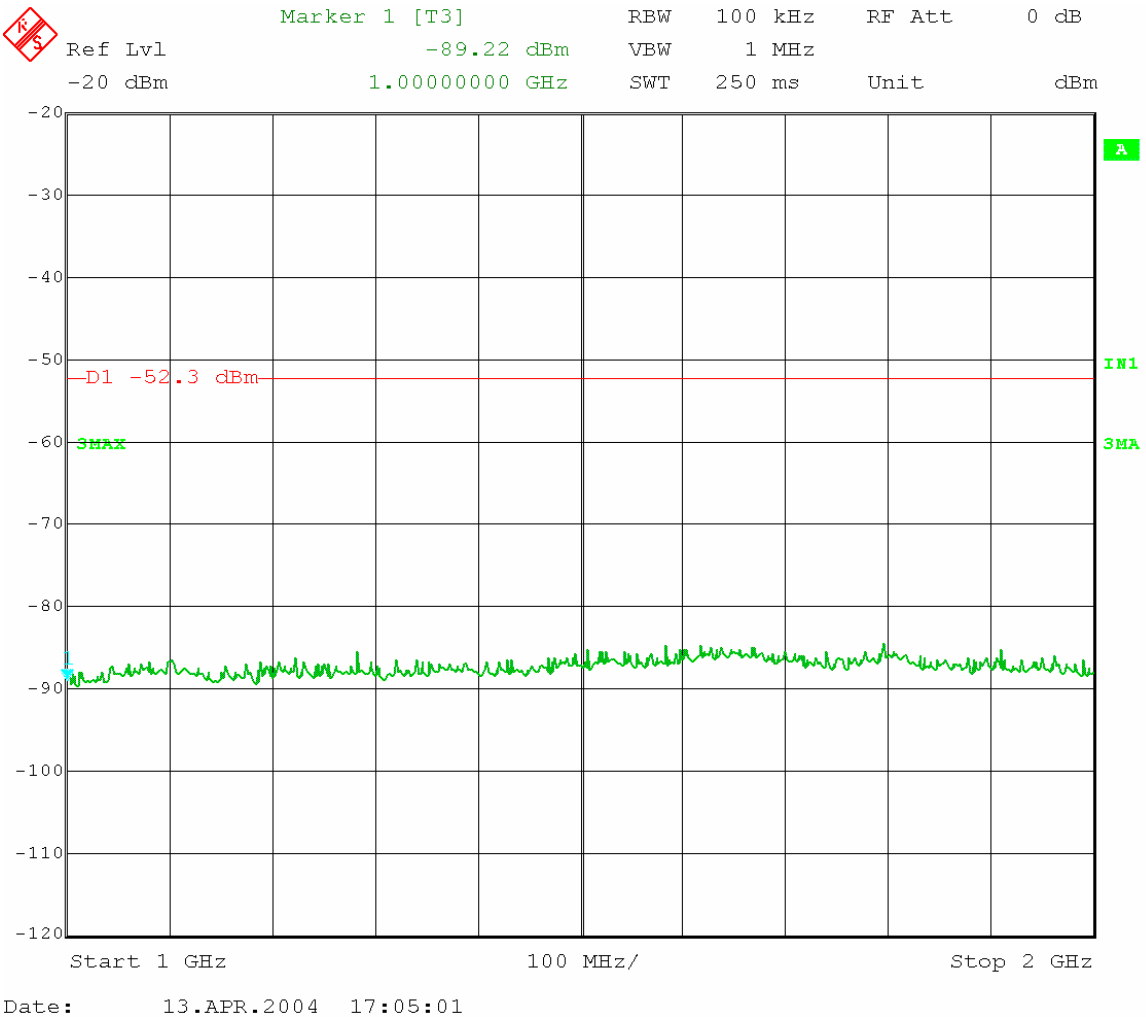
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2435.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

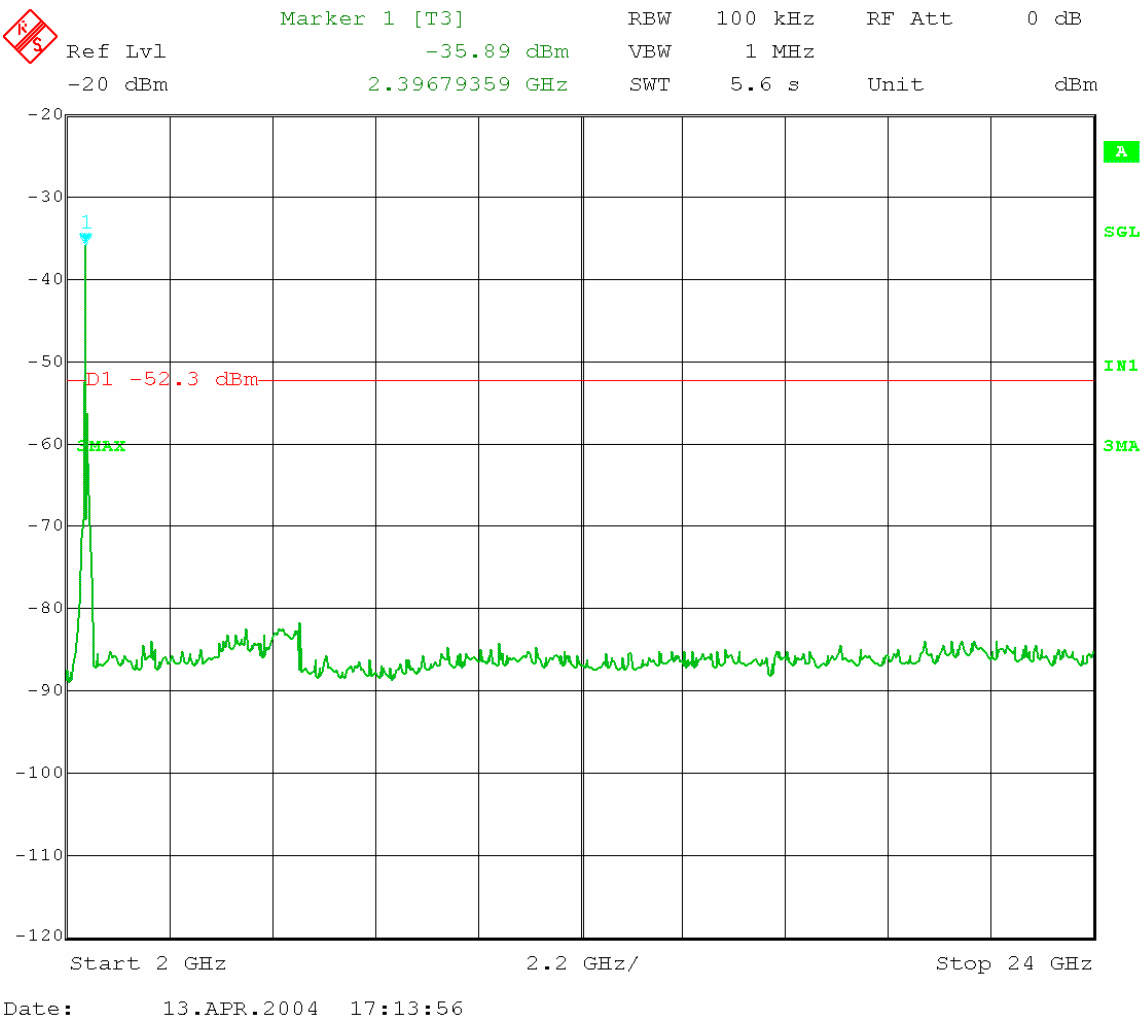
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2435.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

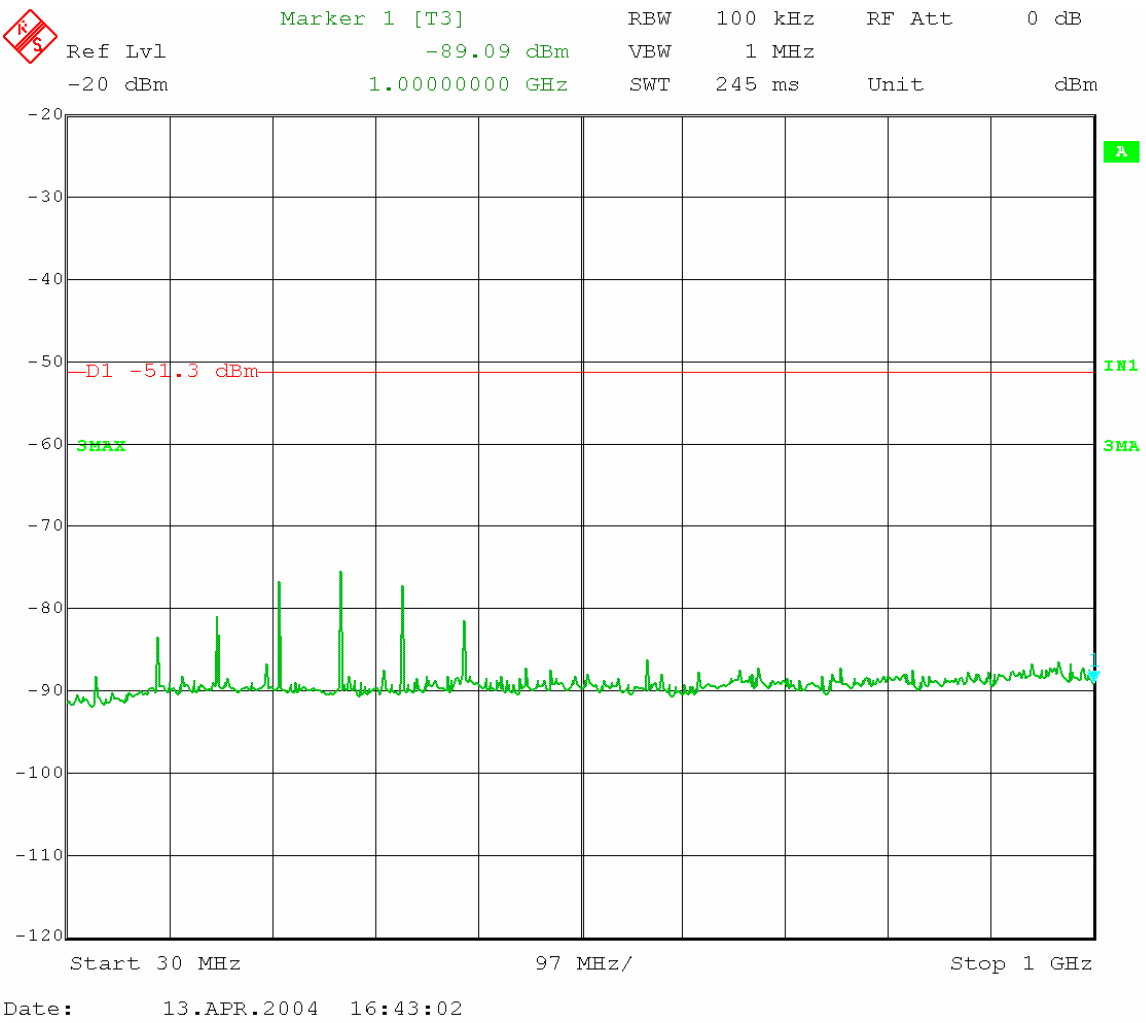
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2435.0MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

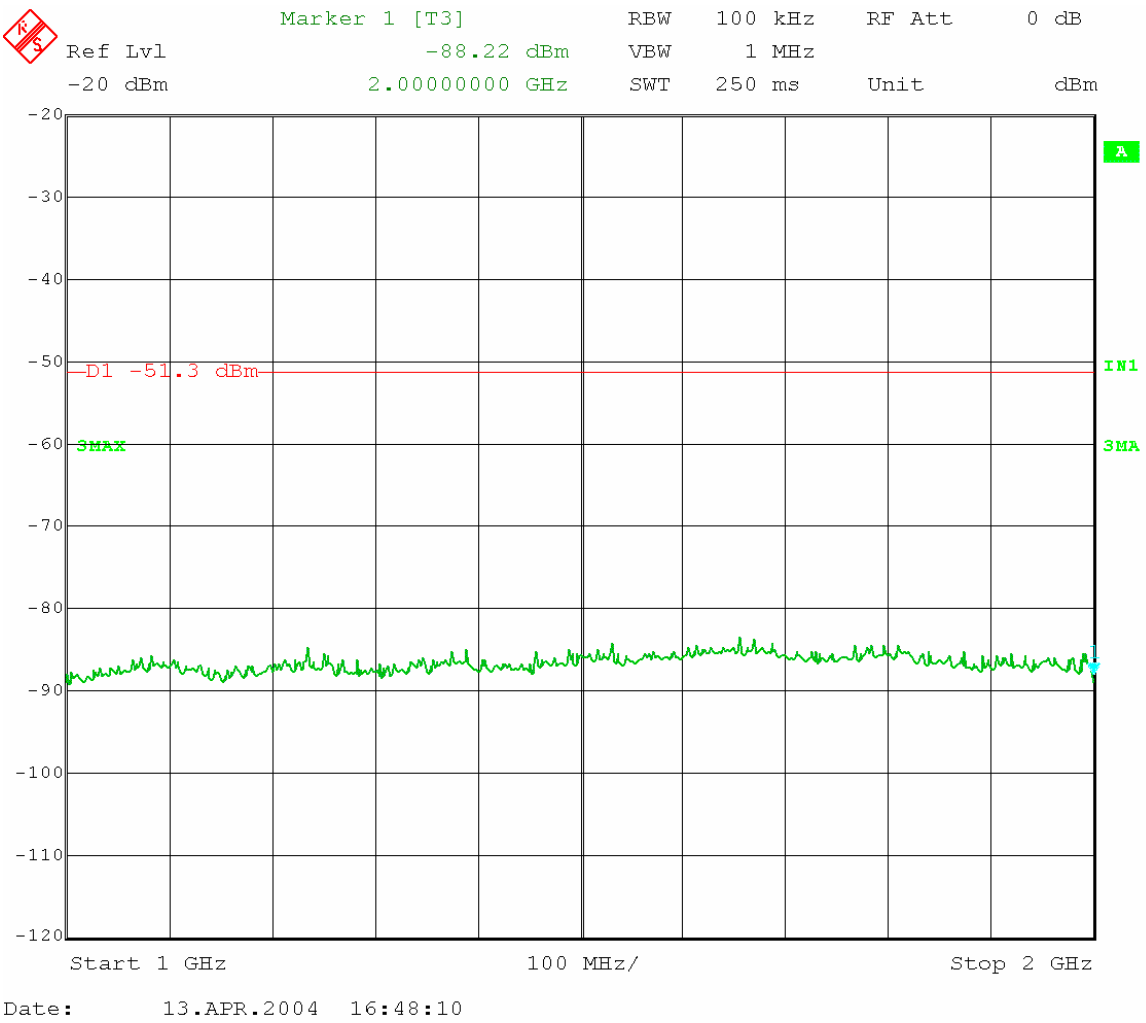
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2457.5MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

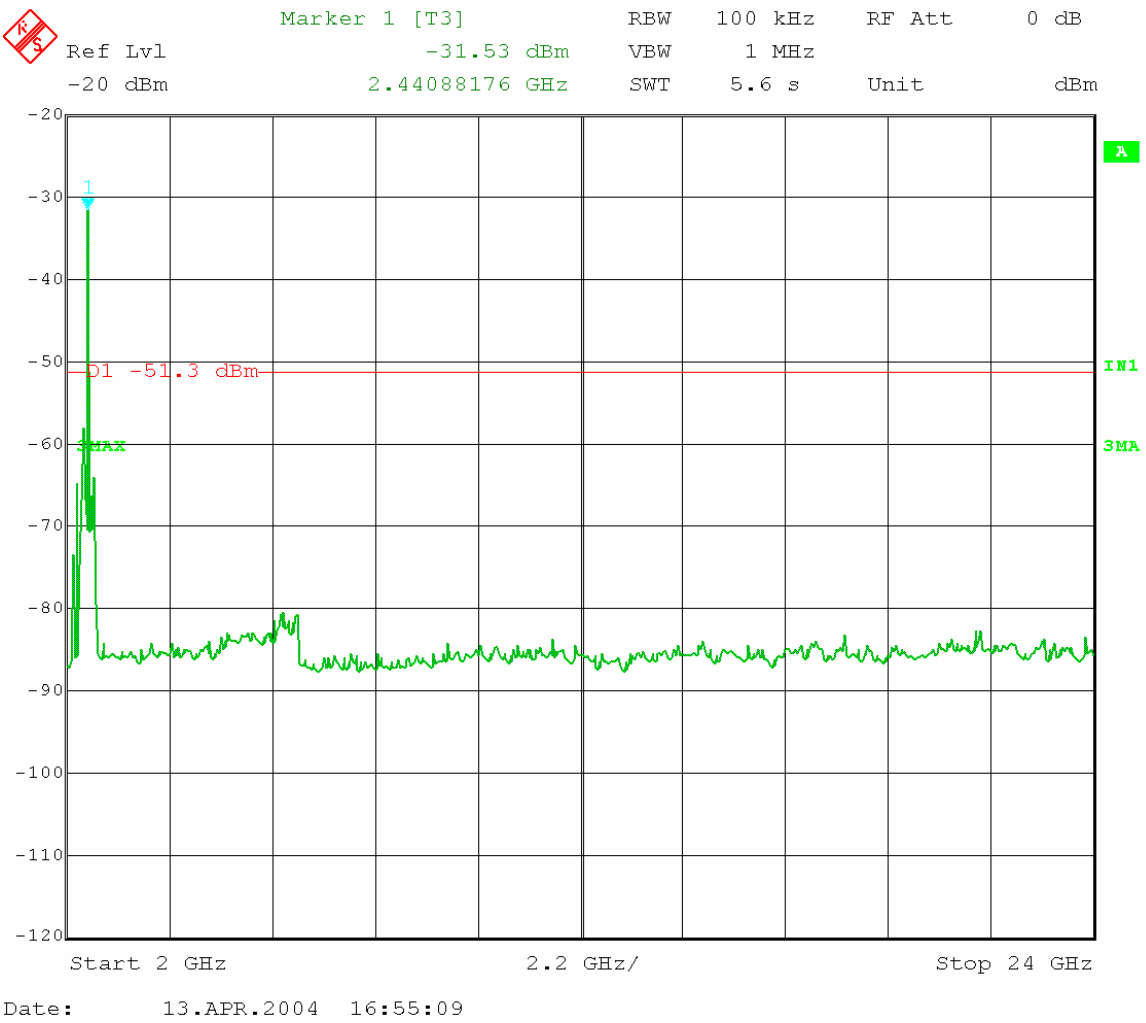
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	none assigned
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2457.5MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Antenna Conducted Emissions
Test Mode	:	Tx @ 2457.5MHz
Date	:	April 13, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
S/N : None assigned
SPECIFICATION : FCC-15.247 Antenna Conducted Emissions
DATE : April 13, 2004
NOTES : Low & Middle Channel

LOW Channel

FREQ MHz	MTR RDG. dBuV	Amb.	BW RBW/VBW	Attenuation dB	TOTAL dBm	15.247 LIMIT 20dBc
2415.0	-32.0		100kHz/1M	40.0	8.1	
4830.0	-83.4	Amb.	100kHz/1M	40.0	-43.4	-11.9
7245.0	-85.3	Amb.	100kHz/1M	40.0	-45.3	-11.9
9660.0	-84.9	Amb.	100kHz/1M	40.0	-44.9	-11.9
12075.0	-82.5	Amb.	100kHz/1M	40.0	-42.5	-11.9
14490.0	-83.3	Amb.	100kHz/1M	40.0	-43.3	-11.9
16905.0	-84.6	Amb.	100kHz/1M	40.0	-44.6	-11.9
19320.0	-84.2	Amb.	100kHz/1M	40.0	-44.2	-11.9
21735.0	-83.4	Amb.	100kHz/1M	40.0	-43.4	-11.9
24150.0	-82.4	Amb.	100kHz/1M	40.0	-42.4	-11.9

MID Channel

FREQ MHz	MTR RDG. dBuV	Amb.	BW RBW/VBW	Attenuation dB	TOTAL dBm	15.247 LIMIT 20dBc
2435.0	-32.0		100kHz/1M	40.0	8.0	
4870.0	-83.1	Amb.	100kHz/1M	40.0	-43.1	-12.0
7305.0	-84.6	Amb.	100kHz/1M	40.0	-44.6	-12.0
9740.0	-84.9	Amb.	100kHz/1M	40.0	-44.9	-12.0
12175.0	-83.2	Amb.	100kHz/1M	40.0	-43.2	-12.0
14610.0	-84.2	Amb.	100kHz/1M	40.0	-44.2	-12.0
17045.0	-83.6	Amb.	100kHz/1M	40.0	-43.6	-12.0
19480.0	-84.3	Amb.	100kHz/1M	40.0	-44.3	-12.0
21915.0	-83.1	Amb.	100kHz/1M	40.0	-43.1	-12.0
24350.0	-83.2	Amb.	100kHz/1M	40.0	-43.2	-12.0

Checked BY : Richard E. King

Richard E. King

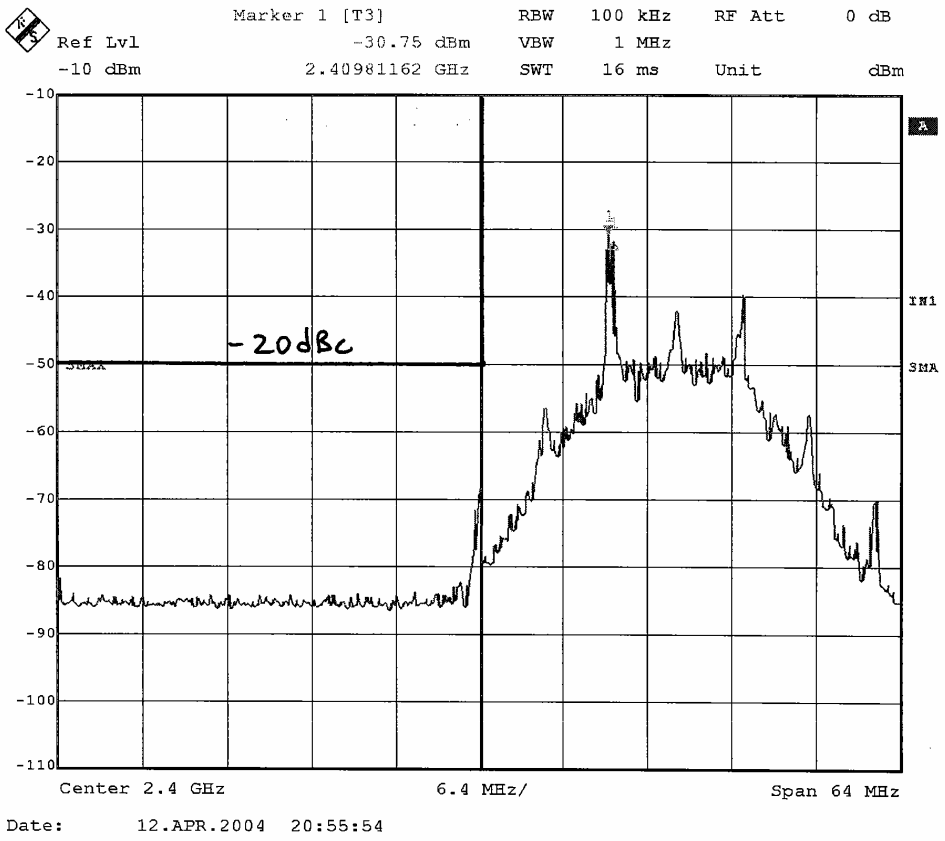
MANUFACTURER : ATE Research LLC.
MODEL : ATE24
S/N : **None assigned.**
SPECIFICATION : FCC-15.247 Antenna Conducted Emissions
DATE : **April 13, 2004**
NOTES : **High Channel**

HIGH Channel

FREQ	MTR RDG.		BW	Attenuation	TOTAL	15.247 LIMIT
MHz	dBuV	Amb.	RBW/VBW	dB	dBm	20dBc
2457.5	-31.5		100kHz/1M	40.0	8.5	
4915.0	-83.1	Amb.	100kHz/1M	40.0	-43.1	-11.5
7372.5	-84.6	Amb.	100kHz/1M	40.0	-44.6	-11.5
9830.0	-84.9	Amb.	100kHz/1M	40.0	-44.9	-11.5
12287.5	-83.2	Amb.	100kHz/1M	40.0	-43.2	-11.5
14745.0	-84.2	Amb.	100kHz/1M	40.0	-44.2	-11.5
17202.5	-83.6	Amb.	100kHz/1M	40.0	-43.6	-11.5
19660.0	-84.3	Amb.	100kHz/1M	40.0	-44.3	-11.5
22117.5	-83.1	Amb.	100kHz/1M	40.0	-43.1	-11.5
24575.0	-83.2	Amb.	100kHz/1M	40.0	-43.2	-11.5

Checked BY : Richard E. King

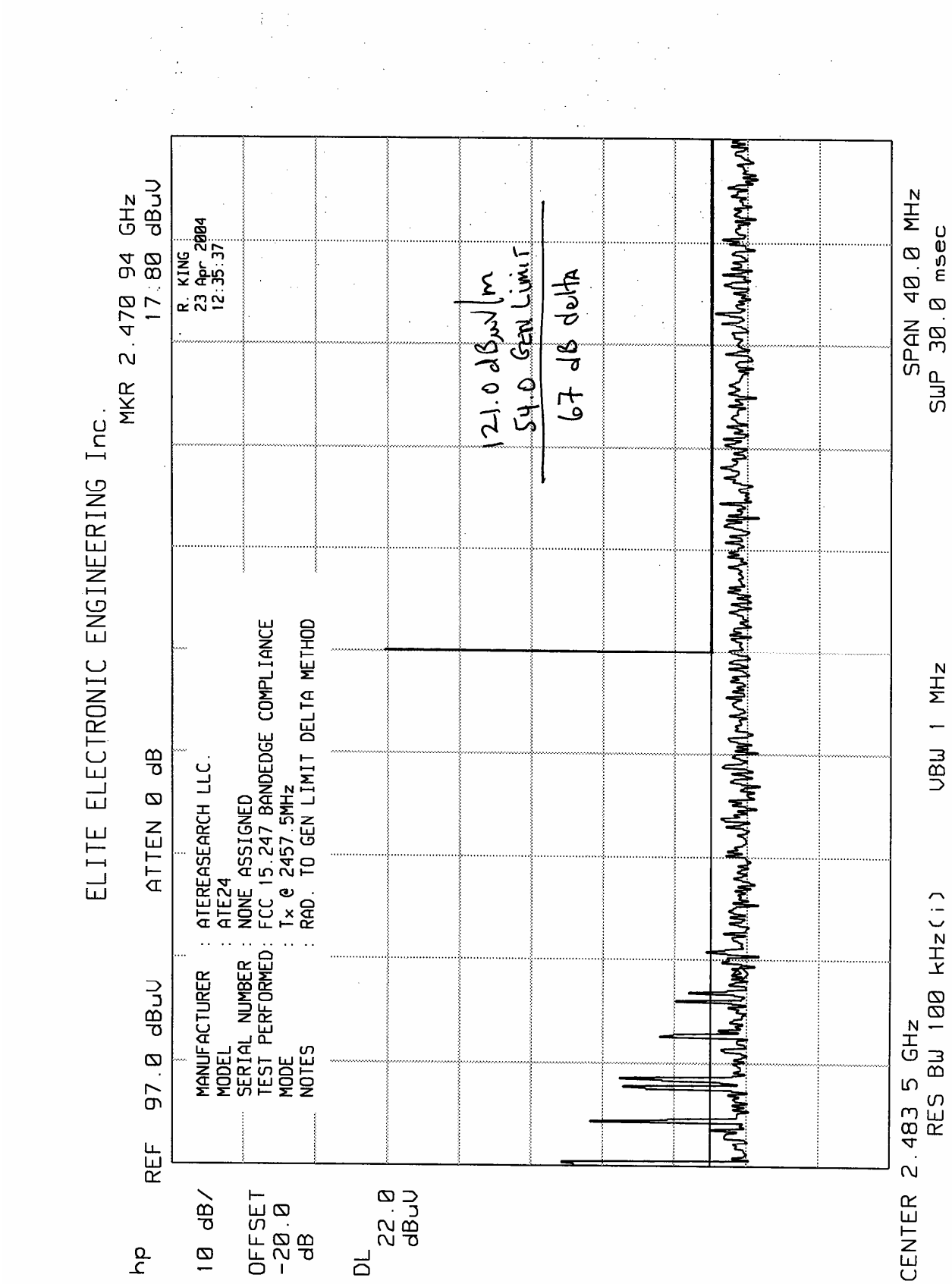
Richard E. King

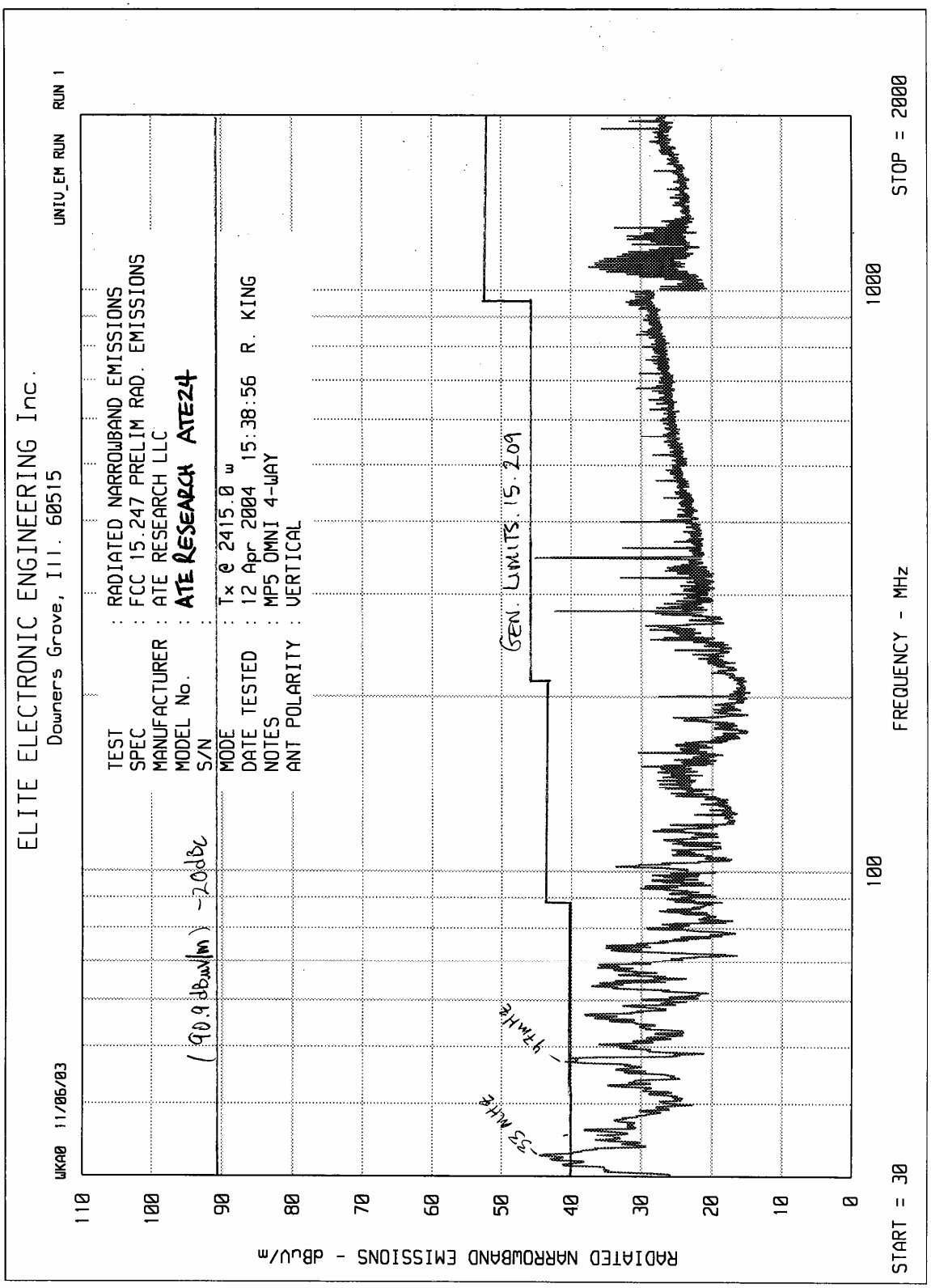


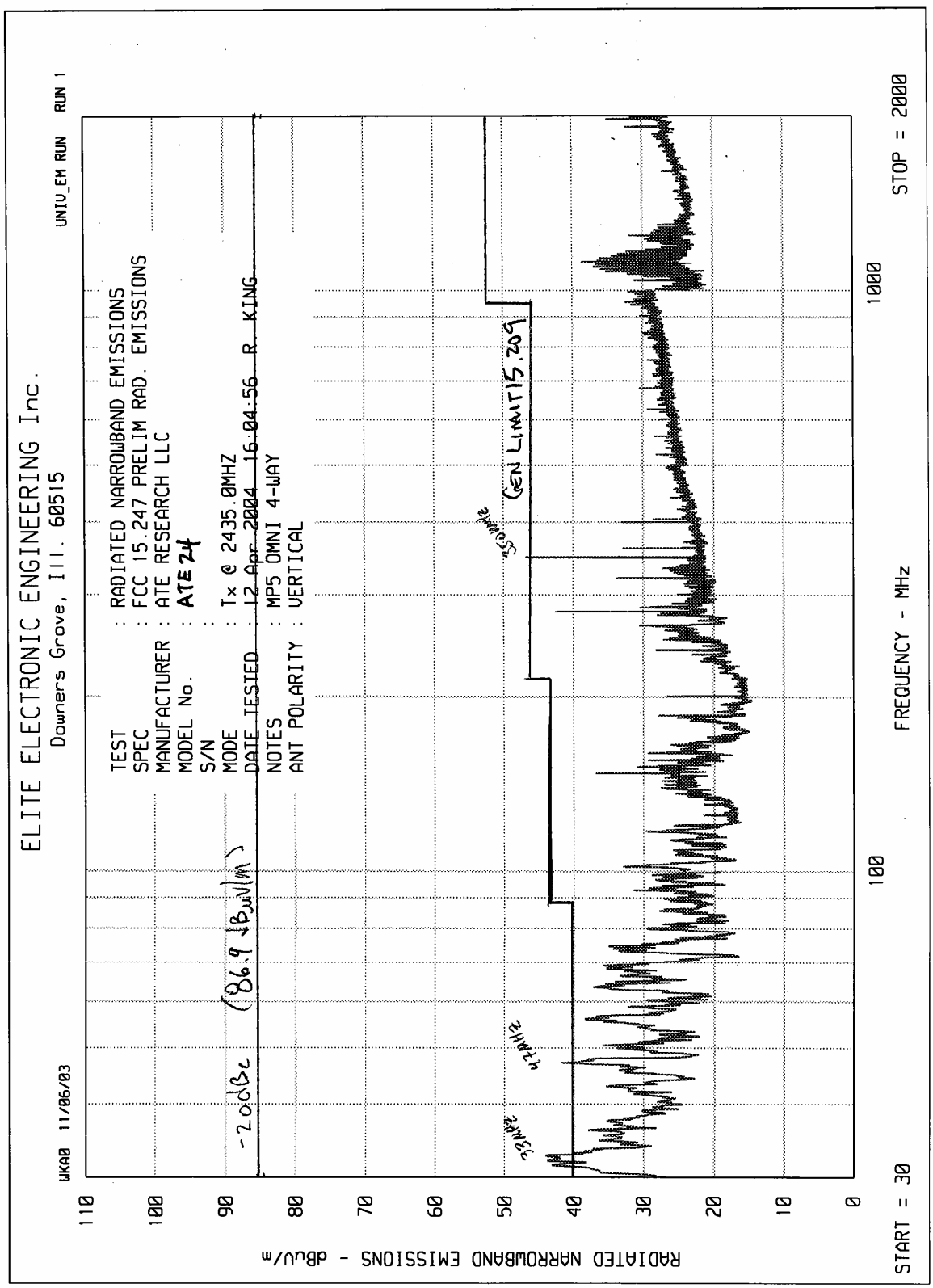
Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (c) Bandedge Compliance
Test Mode	:	Tx @ 2415.0MHz
Date	:	April 12, 2004
Notes	:	40 dB of external attenuation used.

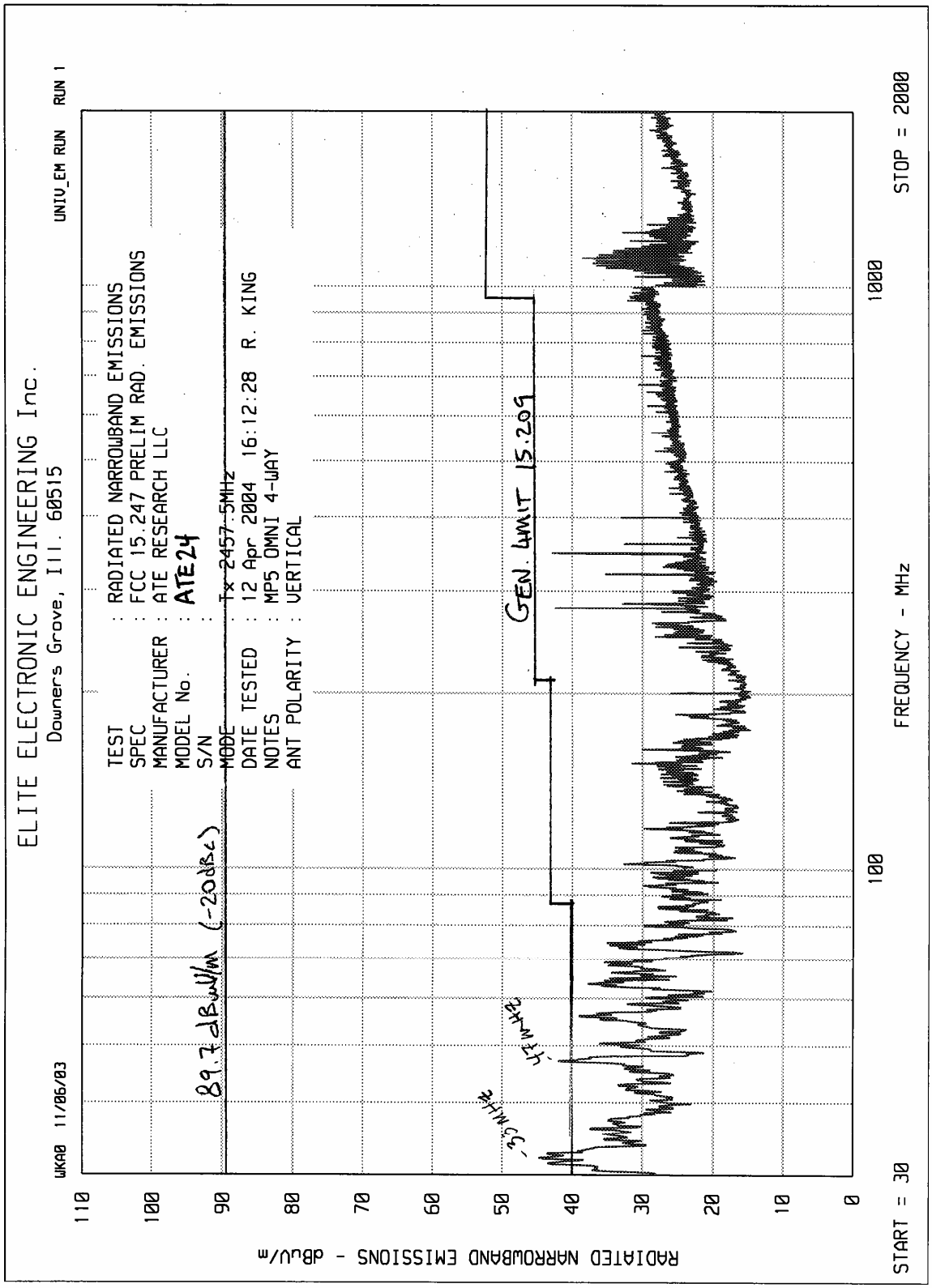
Checked BY : Richard E. King

Richard E. King


ELITE ELECTRONIC ENGINEERING Inc.
MKR 2.470 94 GHz
17.80 dBuV
hp
REF 97.0 dBuV
ATTEN 0 dB
10 dB/
OFFSET
-20.0
dB
DL
22.0
dBuV
MANUFACTURER : ATEREASEARCH LLC.
MODEL : ATE24
SERIAL NUMBER : NONE ASSIGNED
TEST PERFORMED: FCC 15.247 BANDEDGE COMPLIANCE
MODE : Tx @ 2457.5MHz
NOTES : RAD. TO GEN LIMIT DELTA METHOD
R. KING
23 Apr 2004
12:35:37
121.0 dBuV/m
54.0 Gen Limit
67 dB delta
CENTER 2.483 5 GHz
RES BW 100 kHz(i)
VBW 1 MHz
SPAN 40.0 MHz
SWP 30.0 msec


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, III. 60515
UNIV_EM RUN RUN 1
WKA0 11/05/03
TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.247 PRELIM RAD. EMISSIONS
MANUFACTURER : ATE RESEARCH LLC
MODEL No. : ATE RESEARCH ATE24
S/N :
MODE : Tx @ 2415.0 w
DATE TESTED : 12 Apr 2004 15:38:56 R. KING
NOTES : MP5 OMNI 4-WAY
ANT POLARITY : VERTICAL
(90.9 dBuV/m) -20dBc
GEN. LIMITS 15.209
49 MHz
47mHz
RADIATED NARROWBAND EMISSIONS - dBuV/m
110
100
90
80
70
60
50
40
30
20
10
0
START = 30
100
1000
STOP = 2000
FREQUENCY - MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV_EM RUN RUN 1
WKA0 11/06/03
TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.247 PRELIM RAD. EMISSIONS
MANUFACTURER : ATE RESEARCH LLC
MODEL No. : ATE 24
S/N :
MODE : Tx @ 2435.0MHZ
DATE TESTED : 12 Apr 2004 16:04:56 R. KING
NOTES : MP5 OMNI 4-WAY
ANT POLARITY : VERTICAL
-20dBc (86.9 dBuV/m)
2nd Harmonic
4th Harmonic
Gen Limits 15.209
RADIATED NARROWBAND EMISSIONS - dBuV/m
110
100
90
80
70
60
50
40
30
20
10
0
START = 30
100
1000
STOP = 2000
FREQUENCY - MHz


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
UNIV_EM RUN RUN 1
WKA0 11/06/03
TEST : RADIATED NARROWBAND EMISSIONS
SPEC : FCC 15.247 PRELIM RAD. EMISSIONS
MANUFACTURER : ATE RESEARCH LLC
MODEL No. : ATE24
S/N :
MODE : Tx 2457.5MHz
DATE TESTED : 12 Apr 2004 16:12:28 R. KING
NOTES : MP5 OMNI 4-WAY
ANT POLARITY : VERTICAL
89.7 dBuV/m (-20dBc)
GEN. LIMIT 15.209
RADIATED NARROWBAND EMISSIONS - dBuV/m
FREQUENCY - MHz
START = 30
100
1000
STOP = 2000
110
100
90
80
70
60
50
40
30
20
10
0

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : MaxRad Parabolic Dish
ANTENNA M/N : MPR24026PTNF
ANTENNA S/N : 247002
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ.	ANT.	MTR. RDG.		B.W.	DIST. CORR.	ANT.	CABLE	PRE.		15.209
				RBW/VBW	FACT.	FACT.	LOSS	AMP.	TOTAL	Limit
MHz	POL.	dBuV	AMBIENT	Hz	dB	dB	dB	dB	dBuV/m	dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ.	ANT.	MTR. RDG.		B.W.	DIST. CORR.	ANT.	CABLE	PRE.		15.209
				RBW/VBW	FACT.	FACT.	LOSS	AMP.	TOTAL	Limit
MHz	POL.	dBuV	AMBIENT	Hz	dB	dB	dB	dB	dBuV/m	dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : MaxRad Parabolic Dish
ANTENNA M/N : MPR24026PTNF
ANTENNA S/N : 247002
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : Comtelco Omni
ANTENNA M/N : BS2400XL12-0
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.8	Amb.	1M/10		34.9	1.4	0.0	50.1	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.5	Amb.	1M/10		34.9	1.4	0.0	50.8	54.0
4870.0	V	14.4	Amb.	1M/10		34.9	1.4	0.0	50.7	54.0
7305.0	H	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
7305.0	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.7	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : Comtelco Omni
ANTENNA M/N : BS2400XL12-0
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.7	54.0
12287.5	V	15.8	Amb.	1M/10	-9.5	41.3	2.5	0.0	50.1	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : RadioWaves 90º Sectored
ANTENNA M/N : SEC-25V-90-16
ANTENNA S/N : 3288
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.8	1.0	0.0	48.8	54.0
4830.0	V	13.0	Amb.	1M/10		34.8	1.0	0.0	48.8	54.0
12075.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12075.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19320.0	H	15.6	Amb.	1M/10	-9.5	42.6	0.0	0.0	48.7	54.0
19320.0	V	15.8	Amb.	1M/10	-9.5	42.6	0.0	0.0	48.9	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	42.6	0.0	0.0	48.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	42.6	0.0	0.0	48.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4870.0	V	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA : RadioWaves 90º Sectored
ANTENNA M/N : SEC-25V-90-16
ANTENNA S/N : 3288
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.4	Amb.	1M/10		34.9	1.4	0.0	50.7	54.0
4915.0	V	14.4	Amb.	1M/10		34.9	1.4	0.0	50.7	54.0
7372.5	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.7	54.0
12287.5	V	15.5	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : Tetrad-M 2.4GHz
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.00	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.00	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.00	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.00	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.00	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.00	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.00	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.00	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MID. Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.00	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.00	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.00	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.00	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : Tetrad-M 2.4GHz
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ.	ANT.	MTR. RDG.		B.W. RBW/VBW	DIST. CORR. FACT.	ANT. FACT.	CABLE LOSS	PRE. AMP.	TOTAL	15.209 Limit
MHz	POL.	dBuV	AMBIENT	Hz	dB	dB	dB	dB	dBuV/m	dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP 4 in. Beam
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	DIST. AMBIENT	B.W. RBW/VBW Hz	CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	DIST. AMBIENT	B.W. RBW/VBW Hz	CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP 4 in. Beam
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ.	ANT.	MTR. RDG.		B.W. RBW/VBW	DIST. CORR. FACT.	ANT. FACT.	CABLE LOSS	PRE. AMP.	TOTAL	15.209 Limit
MHz	POL.	dBuV	AMBIENT	Hz	dB	dB	dB	dB	dBuV/m	dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP Bullet
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP Bullet
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ.	ANT.	MTR. RDG.		B.W. RBW/VBW	DIST. CORR. FACT.	ANT. FACT.	CABLE LOSS	PRE. AMP.	TOTAL	15.209 Limit
MHz	POL.	dBuV	AMBIENT	Hz	dB	dB	dB	dB	dBuV/m	dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP5 Omni
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19520.0	H	14.7	Amb.	1M/10	-9.5	42.6	0.0	0.0	47.8	54.0
19520.0	V	14.8	Amb.	1M/10	-9.5	42.6	0.0	0.0	47.9	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP5 Omni
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP5 Omni 4-Way
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19520.0	H	14.7	Amb.	1M/10	-9.5	42.6	0.0	0.0	47.8	54.0
19520.0	V	14.8	Amb.	1M/10	-9.5	42.6	0.0	0.0	47.9	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : MP5 Omni 4-Way
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12287.5	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22117.5	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : Wisper Dual Band Sectored
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : Low & Mid Channel

LOW Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4830.0	H	13.0	Amb.	1M/10		34.9	1.4	0.0	49.3	54.0
4830.0	V	13.1	Amb.	1M/10		34.9	1.4	0.0	49.4	54.0
12075.0	H	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
12075.0	V	14.9	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.2	54.0
19320.0	H	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
19320.0	V	15.9	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.7	54.0
24150.0	H	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0
24150.0	V	15.5	Amb.	1M/10	-9.5	40.6	1.0	0.0	47.6	54.0

MIDDLE Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4870.0	H	14.3	Amb.	1M/10		34.9	1.4	0.0	50.6	54.0
4870.0	V	15.1	Amb.	1M/10		34.9	1.4	0.0	51.4	54.0
7305.0	H	13.5	Amb.	1M/10		38.0	2.1	0.0	53.6	54.0
7305.0	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12175.0	H	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
12175.0	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19480.0	H	14.7	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.5	54.0
19480.0	V	14.8	Amb.	1M/10	-9.5	40.3	1.0	0.0	46.6	54.0

Checked BY : Richard E. King

Richard E. King

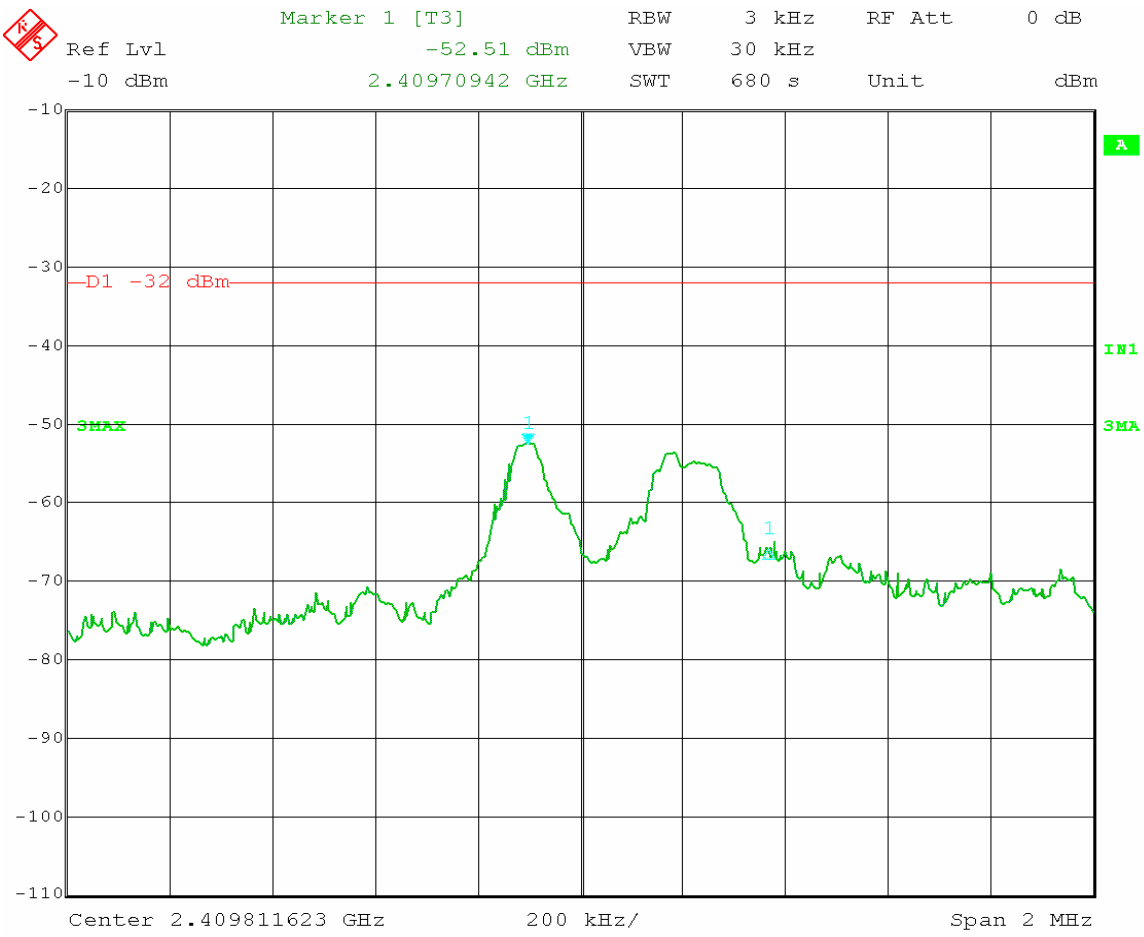
MANUFACTURER : ATE Research LLC.
MODEL : ATE24
ANTENNA M/N : Wisper Dual Band
ANTENNA S/N : None assigned
SPECIFICATION : FCC-15.247 Radiated Emissions
DATE : April 16, 2004
NOTES : High Channel

HIGH Channel

FREQ. MHz	ANT. POL.	MTR. RDG. dBuV	AMBIENT	B.W. RBW/VBW Hz	DIST. CORR. FACT. dB	ANT. FACT. dB	CABLE LOSS dB	PRE. AMP. dB	TOTAL dBuV/m	15.209 Limit dBuV/m
4915.0	H	14.8	Amb.	1M/10		34.9	1.4	0.0	51.1	54.0
4915.0	V	14.9	Amb.	1M/10		34.9	1.4	0.0	51.2	54.0
7372.5	H	13.7	Amb.	1M/10		38.0	2.1	0.0	53.8	54.0
7372.5	V	13.6	Amb.	1M/10		38.0	2.1	0.0	53.7	54.0
12287.5	H	15.4	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.8	54.0
12288	V	15.3	Amb.	1M/10	-9.5	41.3	2.5	0.0	49.6	54.0
19660.0	H	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
19660.0	V	15.2	Amb.	1M/10	-9.5	40.3	1.0	0.0	47.0	54.0
22117.5	H	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0
22118	V	15.3	Amb.	1M/10	-9.5	40.5	1.0	0.0	47.3	54.0

Checked BY : Richard E. King

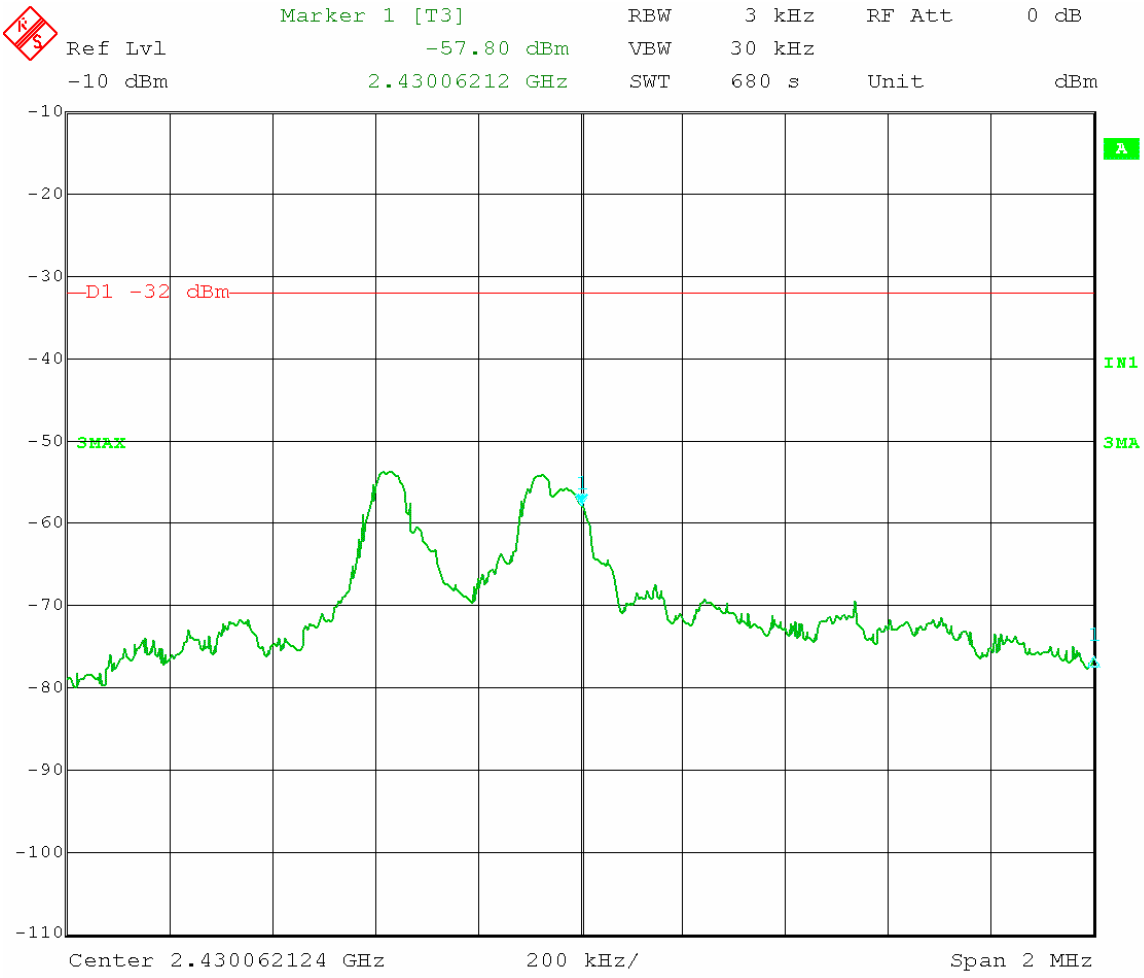
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	none assigned
Serial No.	:	none assigned
Test	:	FCC 15.247 (d) Power Spectral Density
Test Mode	:	Tx @ 2415.0MHz
Date	:	April 12, 2004
Notes	:	40 dB of external attenuation used.
		The display line indicates the 8dBm limit.

Checked BY : Richard E. King

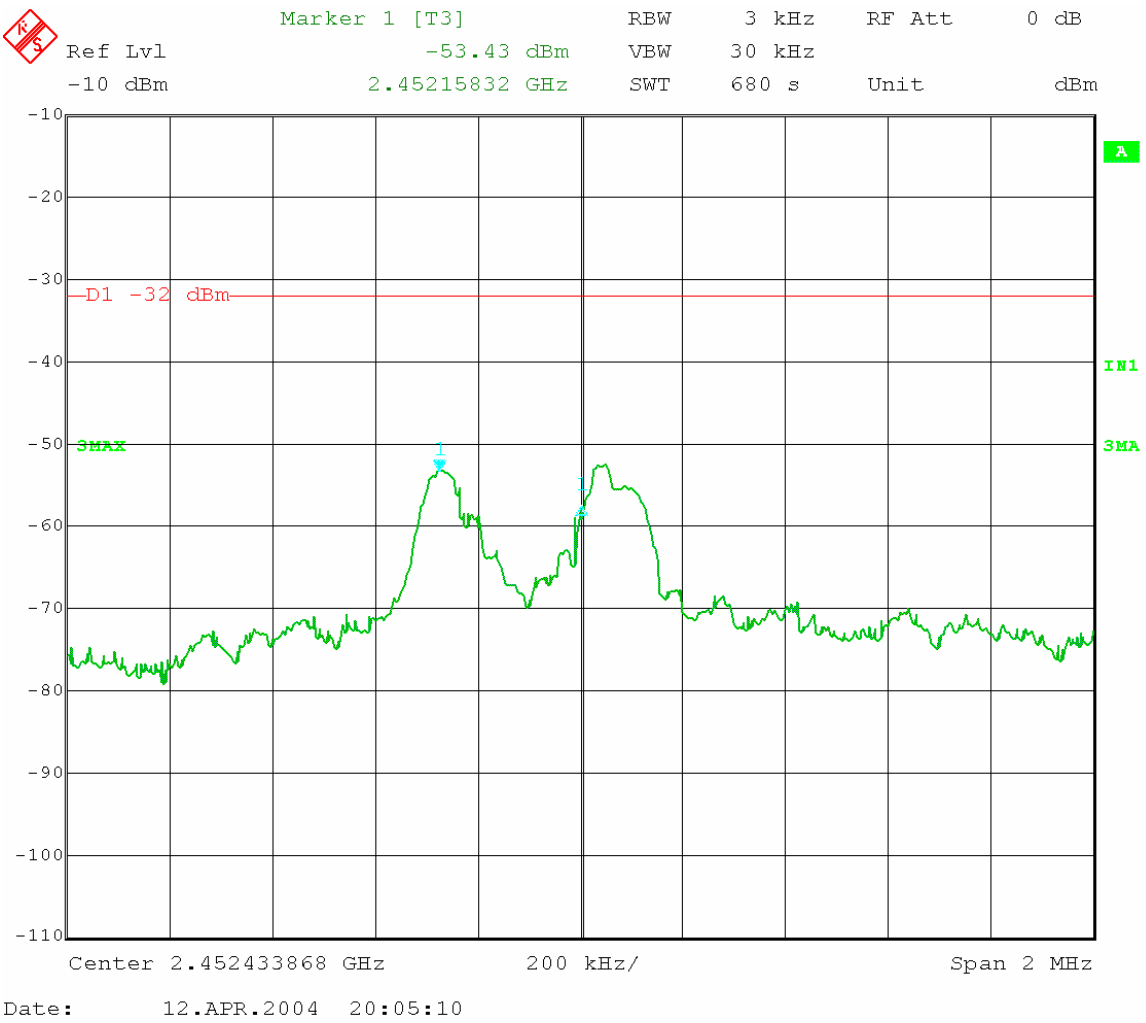
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	none assigned
Serial No.	:	none assigned
Test	:	FCC 15.247 (d) Power Spectral Density
Test Mode	:	Tx @ 2435.0MHz
Date	:	April 12, 2004
Notes	:	40 dB of external attenuation used.
		The display line indicates the 8dBm limit.

Checked BY : Richard E. King

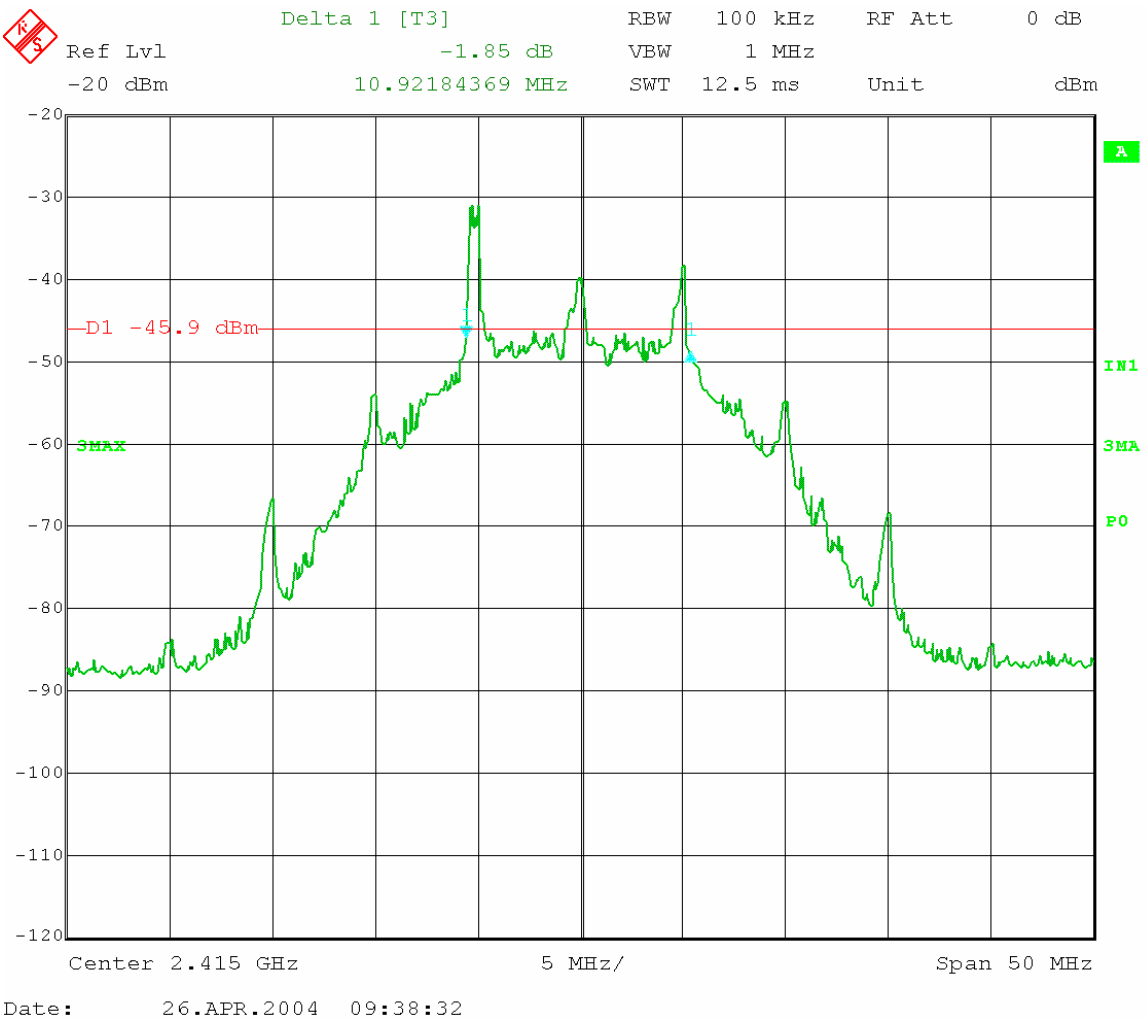
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	none assigned
Serial No.	:	none assigned
Test	:	FCC 15.247 (d) Power Spectral Density
Test Mode	:	Tx @ 2457.5MHz
Date	:	April 12, 2004
Notes	:	40 dB of external attenuation used.
		The display line indicates the 8dBm limit.

Checked BY : Richard E. King

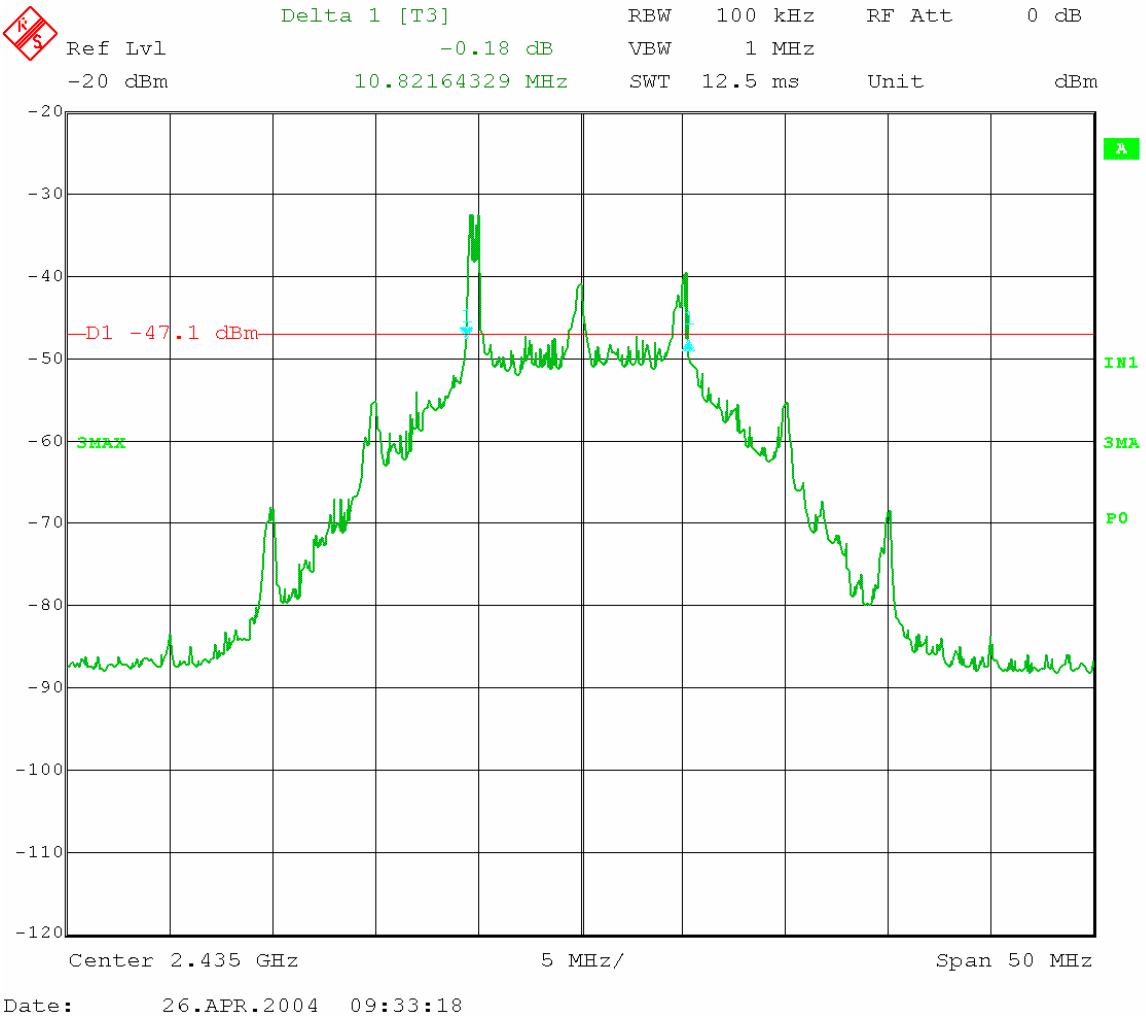
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (a)(2) 6dB Bandwidth
Test Mode	:	Tx @ 2415MHz
Date	:	April 26, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

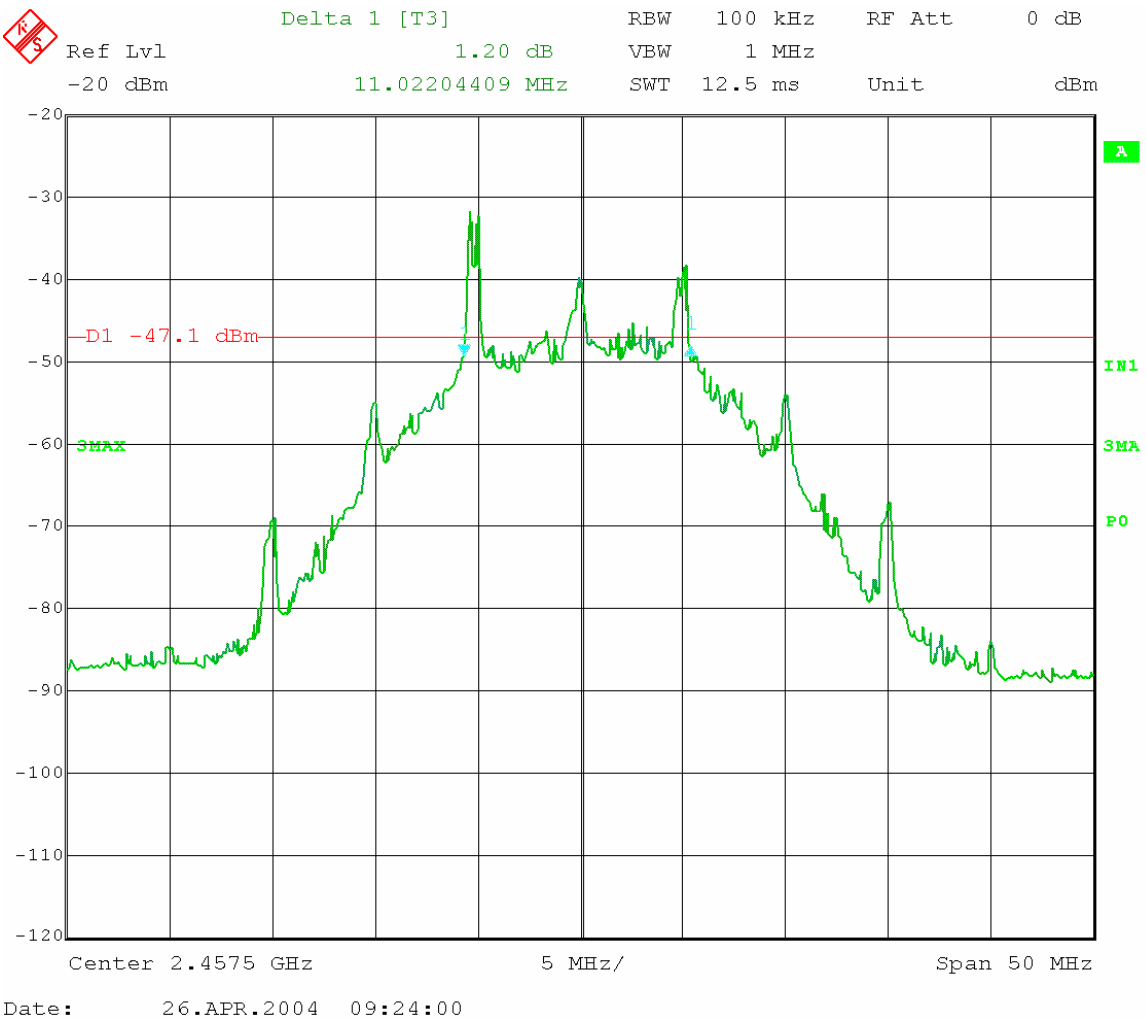
Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (a)(2) 6dB Bandwidth
Test Mode	:	Tx @ 2435MHz
Date	:	April 26, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

Richard E. King



Manufacturer	:	ATE Research LLC.
Model No.	:	ATE24
Serial No.	:	none assigned
Test	:	FCC 15.247 (a)(2) 6dB Bandwidth
Test Mode	:	Tx @ 2457.5MHz
Date	:	April 26, 2004
Notes	:	40 dB of external attenuation used.

Checked BY : Richard E. King

Richard E. King

MANUFACTURER : ATE Research LLC.
MODEL : ATE24
S/N : None given
SPECIFICATION : FCC-15.247 Peak Output Power
DATE : April 26, 2004
NOTES : Bandwidth Correction Factor = 10*log(B/1M)
: Peak Power = Meter Reading + Bandwidth Correction + Factor + Atten.

Frequency MHz	26 dB Bandwidth (B) MHz	Meter Reading dBm	Bandwidth Correction Factor (dB)	Atten. dB	Peak Power dBm	Limit dBm
2415.0	21.15	-31.1	13.3	40.0	22.2	30
2435.0	21.15	-32.4	13.3	40.0	20.9	30
2457.5	21.10	-31.8	13.3	40.0	21.5	30

Checked BY : Richard E. King

Richard E. King